MONO COUNTY GENERAL PLAN DRAFT EIR

SECTION 4.8

HYDROLOGY, FLOODING, WATER QUALITY, WATER SUPPLY

4.8.1 INTRODUCTION AND SUMMARY

To facilitate understanding of the impact analysis and recommended policy mitigations, this section provides an overview of existing hydrologic, water supply and water quality conditions in Mono County. Information for this section is drawn from many sources including the Inyo Mono Integrated Regional Water Management Plan, the *Draft Conservation and Open Space Element* and Mono County MEA (Chapter VIII, Hydrology), the *Water Quality Control Plan for the Lahontan Region,* regional studies conducted by Sierra Nevada Conservancy, and other sources as cited throughout the text. This section also incorporates NOP comments received from the Regional Water Quality Control Board-Lahontan Region, including information about Hydrologic Units in Mono County, General Plan activities that may require permits issued by LRWQCB or the Water Board, a request that county policies reflect strategies recommended in the IRWMP for watershed management, emphasis on use of Low Impact Development and associated stormwater control measures as the best way to reduce impacts to watersheds, and recommendations that Mono County identify existing sources of hydromodification and develop appropriate mitigation measures and that the County also consider use of recycled water as a General Plan Management Strategy. The full text of the LRWQCB comment letter is provided in Appendix B; the full text of the *Draft Conservation Element* and the Mono County MEA can be accessed on the County website at http://www.monocounty.ca.gov/. Key findings of the §4.8 impact analysis and recommended mitigating policies are summarized in the table below.

SUMMARY OF GENERAL PLAN IMPACTS & POLICY MITIGATIONS FOR HYDROLOGY

IMPACT RTP 4.8(a):	**VIOLATE WATER QUALITY OBJECTIVES**
Pre-Mitigation Significance:	**Potentially Significant Impact**
Mitigating Policies:	**See Table 4.8-10 in Appendix D**
Residual Significance:	**Less than Significant Impact**
IMPACT RTP 4.8(b):	**VIOLATE WASTE DISCHARGE REQUIREMENTS**
Pre-Mitigation Significance:	**Potentially Significant Impact**
Mitigating Policies:	**See Table 4.8-10 in Appendix D**
Residual Significance:	**Less than Significant Impact**
IMPACT RTP 4.8(c):	**WATER SUPPLY AVAILABILITY**
Pre-Mitigation Significance:	**Potentially Significant Impact**
Mitigating Policies:	**See Table 4.8-10 in Appendix D**
Residual Significance:	**Potentially Significant Impact**
IMPACT RTP 4.8(d):	**DRAINAGE AND EROSION**
Pre-Mitigation Significance:	**Potentially Significant Impact**
Mitigating Policies:	**See Table 4.8-10 in Appendix D**
Residual Significance:	**Potentially Significant Impact**
IMPACT RTP 4.8(e):	**100-YEAR FLOOD HAZARDS**
Pre-Mitigation Significance:	**Less than Significant Impact**
Mitigating Policies:	**See Table 4.8-10 in Appendix D**
Residual Significance:	**Less than Significant Impact**

IMPACT RTP 4.8(f):	**DAM FAILURE & OTHER FLOODING**
Pre-Mitigation Significance:	**Less than Significant**
Mitigating Policies:	**See Table 4.8-10 in Appendix D**
Residual Significance:	**Less than Significant**
IMPACT RTP 4.8(g):	**SEICHE AND TSUNAMI**
Pre-Mitigation Significance:	**Less than Significant**
Mitigating Policies:	**See Table 4.8-10 in Appendix D**
Residual Significance:	**Less than Significant**

4.8.2 KEY TERMS USED IN THIS SECTION

Acre feet: The volume of one acre of water to a depth of one foot. Each acre-foot of water is equal to approximately 325,851.4 gallons. BGS: Below ground surface.

Beneficial Uses. Aquatic ecosystems and underground aquifers provide many different benefits to the public; beneficial uses define the resources, services, and qualities of these aquatic systems that are the ultimate goals of protecting and achieving high water quality. The SWRCB identifies 23 beneficial uses of waters of the state.

Groundwater and Surface Water: Groundwater is underground and below the water table, whereas surface water in on the ground surface. Water beneath the earth's surface fills the spaces in soil, gravel, or rock formations. Pockets of groundwater are often called "aquifers" and are the source of drinking water for a large percentage of the population in the United States. Groundwater is often extracted using wells which pump the water out of the ground and up to the surface. Groundwater is naturally replenished by surface water from precipitation, streams, and rivers when this recharge reaches the water table. Surface waters include streams, rivers, lakes, wetlands, the ocean, drainage flows and sheet flows. Surface water is replenished naturally through precipitation, and lost naturally through evaporation, consumptive use and infiltration into underlying materials.

Hydrologic Unit: Hydrologic Units provide a way to identify drainage basins, from largest to smallest. Hydrologic units differ from watersheds in that their boundaries may or may not include all of the source area contributing surface water to a single defined outlet point. Hydrologic units are designated by a unit code system that classifies the area by region, Subregion, accounting and cataloguing units, watershed and subwatershed.

Hydromodification. Hydromodification is the alteration of the natural flow of water through a landscape, and often takes the form of channel modification or channelization. Hydromodification is a leading source of impairment in streams, lakes, estuaries, aquifers, and other water bodies in the United States.

Low Impact Development (LID). LID is a stormwater management approach designed to maintain a landscape that is functionally equivalent to predevelopment hydrologic conditions with minimal generation of non-point source pollutants. LRWQCB has identified LID as the foremost method of reducing impacts to watersheds from urban development.

Nondegradation Policy. A policy adopted by the SWRCB in 1968 that is designed to protect high quality waters. The policy states that when the existing quality of water is better than required by Basin Plan objectives (both narrative and numerical), such existing quality shall be maintained unless appropriate findings are made under the policy.

Sediments. Sediments include particulate organic and inorganic matter that is suspended or dissolved in, and carried by or accumulated in water. In common terms, sediments and solids are frequently referred to as dirt, soils or eroded materials. Sediments and solids are associated with a wide range of adverse effects: they serve as binding agents and thereby host the transport of other contaminants (particularly heavy metals) to downstream sites; they block light penetration, increase turbidity, interfere with spawning and juvenile fish rearing activities, hasten infilling of impoundments, alter substrates, compromise beneficial uses and diminish aesthetic values. Sedimentation is considered to be a dominant process determining the fate of many contaminants in urbanized areas.

Septic System. A tank, usually below ground, for containing sewage to be composted by bacteria that do not require oxygen. The sewage separates into a solid that settles to the bottom, and a liquid that flows to a leach field for final treatment by the soil.

Sustainable Safe Yield. Safe yield of a groundwater basin or aquifer system is defined as the amount of water that can be withdrawn from it without producing an undesired effect. Undesired effects can include loss of reserves, land subsidence, impacts to ecological base flows, infringement of water rights, reduced discharges to surface waters, loss of well productivity, reduced water quality and other potential effects. As ecological values have become more important, attention has increasing focused on sustainable safe yield, which carries the broader meaning of groundwater use and development in a way that can be maintained indefinitely without causing significant environmental, economic or social consequences.[1]

Waste reduction. All means of reducing the amount of waste that is collected by solid waste authorities. The term includes legislation, product design, and local programs to keep reusable materials out of the final waste stream.

Water Quality Objectives. SWRCB uses both narrative and numerical objectives. Narrative objectives are general water quality descriptions that must be attained through pollutant control measures and watershed management. They also serve as the basis for developing numerical objectives. Numerical objectives describe pollutant concentrations, physical/chemical conditions of the water, and toxicity of the water to aquatic organisms. These objectives represent maximum pollutant levels that can be in the water column without causing any adverse effect.

Watershed: A geographic area (large or small) of land, water and biota within the confines of a drainage divide. Watershed boundaries follow the highest ridgeline and meet at the lowest point of land where water flows out of the watershed. The boundary between watersheds is the point from which water flows in two different directions.

CONVERSION FACTORS

1 million gallons per day (mgd) = 1.547 cubic feet per second (cfs)
1 mgd = 3.08 Acre-Feet per Day = 1,123.4 AF per Year (AFY)
1 acre-foot (AF) = 43,560 cubic feet = 324,900 gallons
1 cfs = 450 gallons per minute = 1.983 AF per 24 hours = .646 mgd
1 AF is about the amount of water needed to supply a family of 4 for 1 year

4.8.3 OVERVIEW OF EXISTING CONDITIONS

4.8.3.1 Beneficial Uses and Water Quality Standards[2]

The State Water Resources Control Board (SWRCB) *Water Quality Control Plan for the Lahontan Region* (known as the 'Basin Plan') designates beneficial uses for waters of the state of California, along with water quality objectives to protect those beneficial uses. Three beneficial uses are not found in the Lahontan Region: 'Marine Habitat,' 'Estuarine Habitat,' and 'Shellfish Harvesting.' However, since the plan was first adopted in 1975, the California Regional Water Quality Board, Lahontan Region (LRWQCB) has added several beneficial uses for the Region, bringing the number of beneficial uses recognized in the Lahontan Region to a total of 22; the added designations include agricultural supply (AGR), aquaculture (AQUA), preservation of biological habitats of special significance (BIOL), cold freshwater habitat (COLD), commercial and sportfishing (COMM), flood peak attenuation/flood water storage (FLD), freshwater replenishment (FRSH), groundwater recharge (GWR), industrial service supply (IND), migration of aquatic organisms (MIGR), municipal and domestic supply (MUN), navigation (NAV), hydropower generation (POW), industrial process supply (PRO), rare/threatened/endangered species (RARE), water contact recreation (REC-1), non-contact water

[1] William M. Alley and Stanley A. Leake, *The Journey from Safe Yield to Sustainability,* Groundwater Journal, Vol. 12, #1, Jan-Feb 2004; accessed at National Groundwater Association website: https://info.ngwa.org/GWOL/pdf/040678070.pdf.
[2] LRWQCB, *Water Quality Control Plan for the Lahontan Region,* March 31, 1995 (amendments effective August 1995 through December 2005).

recreation (REC-2), inland saline water habitat (SAL), spawning/reproduction/development (SPWN), warm freshwater habitat (WARM), wildlife habitat (WILD), and water quality enhancement (WQE).

In many instances, the Basin Plan identifies multiple beneficial uses for a given water body, with water quality objectives designed to protect the most sensitive of the designated uses. Unless specifically exempted, all waters are designated for municipal and domestic supply (MUN). Many beneficial uses may apply to only portions of a stream or surface water during certain temporal conditions; these temporary designations include IND, PRO, GWR, FRSH, NAV, POW, WARM, COLD, SAL, MIGR, SPWN and WQE. A total of 17 hydrologic units (HU) are found in Mono County, and most of the hydrologic units have designated subunits and drainage features with specific beneficial use designations. Table 4.8-1 below lists the Hydrologic Units in Mono County.

TABLE 4.8-1. Hydrologic Units in Mono County

HU #	Hydrologic Unit (HU) Name	HU #	Hydrologic Unit (HU) Name
631.00	West Walker River	630.40	East Walker Tributaries
631.10	Antelope Valley	601.00	Mono
631.20	Slinkard Creek	602.00	Adobe
631.30	Desert Creek	602.10	Dexter Creek
631.40	Upper West Walker River	602.20	Huntoon Creek
630.00	East Walker River	603.00	Owens
630.10	Masonic	603.10	Long
630.20	Bodie	603.20	Upper Owens
630.30	Bridgeport		

Water Quality Objectives are divided into 3 categories:

- Objectives that apply to all surface waters, including standards for Ammonia, Bacteria (Coliform), Biostimulatory Substances, Chemical Constituents, Chlorine (Total Residual), Color, Dissolved Oxygen, Floating Materials, Oil and Grease, Non-degradation of Aquatic Communities and Populations, Pesticides, pH, Radioactivity, Sediment, Settleable Materials, Suspended Materials, Taste and Odor, Temperature, Toxicity and Turbidity
- Objectives for certain water bodies, comprising standards that supersede the objectives for all surface waters and are designed to protect surface waters (including wetlands) in specific areas. In Mono County, these objectives apply to the West Walker River HU, the East Walker River HU, the Mono HU, and the Owens HU.
- Objectives for fisheries management activities using the fish toxicant Rotenone. Rotenone is a fish toxicant used by DFW for fishery management purposes. When used, rotenone can cause several water quality objectives to be temporarily exceeded. The additional narrative water quality objectives that apply in these areas include color, pesticides, toxicity, and species composition.

The Basin Plan also contains two categories of water quality objectives for ground water, including objectives that apply to all groundwaters (including standards for Bacteria, Chemical Constituents, Radioactivity and Taste and Odor), and objectives that apply to specific groundwater basins; there are no Mono County ground water basins subject to these special objectives.

The Regional Board is responsible for implementation of State and federal antidegradation policies, which require that whenever the existing quality of water is better than that needed to protect all existing and probable future beneficial uses, the existing high quality shall be maintained until or unless it has been demonstrated to the State that any change in water quality will be consistent with the maximum benefit of the people of the State, and will not unreasonably affect present and probable future beneficial uses of such water. When it is determined that some degradation is in the best interest of California residents, some increase in pollutant level may be appropriate. The *Basin Plan* notes, however, that such increases may not cause adverse impacts to existing or probable future beneficial uses of waters. *Basin Plan* implementation occurs through multiple implementing channels and regulatory agencies, and the *Plan* identifies many implementing procedures that may involve local agencies as briefly summarized below:

- Stormwater Discharges: Local governments have authority to control stormwater discharges, subject to a number of State laws and regulations with important implications for stormwater control. These include the CEQA, the

Mono County Grading Ordinance, and the Subdivision Map Act. The *Basin Plan* recommends that all local governments in the Lahontan Region consider the prevention and control of stormwater problems to be a high priority in the zoning and design of new development and redevelopment. The *Basin Plan* also recommends that local governments apply for federal grant funds under CWA §205(j), §314, and §319 to study stormwater problems and control measures.

- Waste Disposal Systems: Some local agencies have adopted, through Memoranda of Understanding, waste disposal criteria that are compatible with or more stringent than criteria adopted by the Regional Board. In these instances, land developments that discharge only domestic waste are permitted entirely by the local agency.
- Alternative Individual Waste Disposal Systems: In areas where conditions do not support the use of conventional individual subsurface waste disposal systems (e.g., septic systems), the use of engineered alternative systems can be considered subject to approval by the Local Health Officer.
- Control Measures for Ground Water Protection and Management: The Regional Board generally waives its regulation of individual waste disposal systems where the systems will be regulated by the county; provisions of the regulation are included in Memoranda of Understanding (MOUs) with each county or city. The waste discharges are also concurrently regulated by other State and local agencies including the California Integrated Waste Management Board (CIWMB) and the Department of Toxic Substance Control (DTSC) where relevant.
- CEQA. SWRCB cannot take action on a request for water quality certification for a hydroelectric project (§401 Certification) until CEQA compliance is demonstrated. Ordinarily, the State Board will serve as lead agency for CEQA purposes. However, if the project proponent is a local agency, that agency should be the lead agency under CEQA. No action can be taken on water quality certification until the local agency complies with CEQA.

4.8.3.2 Surface Water and Groundwater Management Planning[3]

Hydrologic Units and Watersheds in Mono County. The California Water Quality Control Board (along with many state and federal agencies) uses Hydrologic Units to identify and classify drainage basins in the state. Mono County falls within the southern portion of the Lahontan Region, one of nine regional boards charged with responsibility to adopt and implement water quality control plans that define regional differences in water quality, beneficial uses, and water quality problems. As noted by LRWQCB in their comments on the *RTP/General Plan NOP,* Mono County contains portions of 7 Hydrologic Units (including Adobe, Deep Springs, East Walker, Fish Lake, Mono, Owens, and West Walker). Mono County also contains all or part of 10 watersheds (including Antelope Lake Valley, Adobe Lake Valley, Bridgeport Valley, Fish Lake Valley, Long Valley, Mono Valley, Owens Valley, Slinkard Valley, Sweetwater Flat and Topaz Valley). Specific water quality objectives and standards for all waters in Mono County are contained Chapter 3 of the *Water Quality Control Plan for the Lahontan Region* (Basin Plan), as discussed more fully below.

Surface Water Quality. During 2012, the Sierra Nevada Conservancy (SNC) issued a report assessing water quality system indicators,[4] one in a series of reports analyzing 19 system indicators in the SNC region (i.e the entire Sierra Nevada range from the Oregon border into Kern County). The report found that the overall water quality of rivers, lakes, and streams is better in the Sierra than in much of the state, but cited specific water quality issues that include:

- Mercury (from mining operations in rivers and streams), increased water temperature, and pathogen and nutrient loading in rivers and lakes (often associated with agriculture and grazing and inadequate sewage treatment).
- High ozone levels transported into Mono County from the Central Valley; the Conservancy notes, however, that ozone levels have declined sharply in recent years.
- Temperature increases, particularly at the higher elevations, and the disproportionate rise of nighttime low temperatures (nighttime lows above 6,000' have increased in the range of 3˚F over the past 40 years).
- Year-to-year precipitation, although erratic baseline levels make it difficult to discern long-changes, and.
- Snowpack. Again, large annual variation in the baseline tends to obscure trends over the past 40 years, but a long-term comparison of April 1 to March 1 measurements substantiates that average April 1st snowpack has

[3] Mono County Powerpoint Presentation, *The Sustainable Groundwater Management Act of 2014* (undated, but prepared during 2014.)
[4] Sierra Nevada Conservancy, *System Indicators, Water & Air Quality, Temperature, Precipitation and Snowpack.* December 2012.

significantly declined *relative* to March 1st snowpack in the past 20 years, implying earlier snow melt and/or less snowfall during March.

Water throughout most of the Inyo-Mono IRWM planning area is of very high quality, with limited potential for contamination compared to parts of the state; many of the identified water-quality issues in the Inyo-Mono planning region result from naturally-occurring minerals. However, the SNC notes that several Mono County waterbodies in the Inyo Mono IRWM region have been included in Category 5 of the *Final 2010 Integrated Report* List of Impaired Water Bodies, a program established under the Clean Water Act for water bodies that do not meet water quality standards. Category 5 includes water-quality-limited segments where standards are not being met and a Total Maximum Daily Limit (TMDL) is required but not yet completed for at least one of the listed pollutants. The Category 5 listed waters are shown in Table 4.8-2, along with the pollutants of concern.

TABLE 4.8-2: Impaired Water bodies in the Inyo-Mono planning region on the 303(d) list[5]

Name	Pollutant(s)	Area of Impact	Date First Listed	Goal Correction Date
Bodie Creek	Mercury	11 miles	2006	2019
Bridgeport Lake & Reservoir	Nitrogen, phosphorus, sediment	2614 acres	1992	2006
Crowley Lake	Ammonia, dissolved oxygen	4861 acres	2006	2019
East Walker River below Bridgeport Reservoir	Sediment	8 miles	2002	2019
	Manganese, turbidity	8 miles	2010	2021
Hilton Creek	Dissolved oxygen	9.4 miles	2010	2021
Mammoth Creek (headwaters to Twin Lks)	TDS	2.6 miles	2010	2021
Mammoth Creek (Twin Lks to Old Mammoth Rd)	Manganese	1.9 miles	1996	2021
	Mercury	1.9 miles	2006	2019
Mammoth Creek (Old Mammoth Rd to US395)	Manganese	6 miles	1996	2021
	Mercury	6 miles	2006	2019
	TDS	6 miles	2010	2021
Mammoth Creek (unnamed tributary)	Arsenic	1.7 miles	2010	2012
	Mercury	1.7 miles	2010	2021
Rock Creek	TDS	33 miles	2010	2021
Swauger Creek	Pathogens	14 miles	2002	**
	Phosphorus	14 miles	2002	2019

****This issue is being addressed through livestock grazing management practices.

There are no Mono County surface waters listed under Category 4A (Water Quality Limited Segments that are being addressed through approved TMDLs). However, several Mono County surface waters are on the 4B list (Segments being addressed by actions other than TMDLs), including Buckeye Creek, East Walker River and Robinson Creek -- all of which are listed for pathogens and being addressed through a livestock grazing management program under LRWQCB), and Mono Lake which is listed for chlorides, TDS and salinity, and being addressed through SWBCB Water Rights Decision 1631.

Multiple county water bodies are listed under Category 3 (insufficient information to assess beneficial uses) including Green Creek (listed for fecal coliform as a threat to water contact recreation; coliform and nitrate/nitrite, specific conductance and turbidity as threats to drinking water supply; and multiple chemical threats to the beneficial use designation for Cold Freshwater Habitat); Mill Creek, Owens River-Long HU, and Owens River-Upper HU (listed for flow alterations as a threat to Cold Freshwater Habitat); Robinson Creek-Barney Lake to Twin Lakes (listed for fecal coliform as a threat to water contact recreation; coliform and nitrate/nitrite, specific conductance and turbidity as threats to

[5] SWQCB website: http://www.waterboards.ca.gov/water_issues/programs/tmdl/2010state_ir_reports/category5_report.shtml.

drinking water supply); and multiple chemical threats to the beneficial use designation for Cold Freshwater Habitat); Topaz Lake (listed for sedimentation as a threat to aquatic life support under the beneficial use designation as Cold Freshwater Habitat); Twin Lakes (listed for nitrogen and phosphorus as a threat to Cold Freshwater Habitat), Virginia Creek (listed for fecal coliform as a threat to water contact recreation; coliform and nitrate/nitrite, specific conductance and turbidity as threats to drinking water supply; and multiple chemical threats to the beneficial use designation for Cold Freshwater Habitat). Two Mono County surface waters are listed under Category 2 (waters supporting some beneficial uses) including Lee Vining Creek (listed for flow alterations under Wildlife Habitat), and West Walker River (listed for sedimentation and siltation under Cold Freshwater Habitat); there are no Mono County surface waters in Category 1 (indicating that all core beneficial uses are supported).

Arsenic and uranium have been present at levels above drinking water standards in groundwater monitoring samples from several Mono County locations, as have boron, fluoride and other inorganic contaminants. MCWD has modified its pumping and water treatment operations to meet the revised arsenic standards, and the Mono County Health Department is monitoring uranium levels and working with at least one water company (Mountain Meadows) to meet current standards. Groundwater in the vicinity of the Benton Crossing landfill is monitored with a series of wells to detect groundwater quality changes resulting from materials leaching out of the landfill. The Inyo-Mono IRWP reports that the wells have detected low concentrations (1-2 ppb) of three volatile organic compounds. The concentrations are well below the maximum contaminant levels, and appear to be stable. The IRWMP also notes that there were 12 known cases of leaking underground storage tanks in the upper Owens watershed as of 1998.

Unpaved roads are the principal source of sediments from human activities throughout the Sierra Nevada. Erosion potential is increased by activities that compact or expose soils directly to rainfall and runoff, and the eroded materials are often transported into a stream. Petroleum- and rubber-based materials wash off paved roads into small channels, and nitrogen and phosphorus even streams from varied sources including septic system leaks, overuse of fertilizers, pet wastes and others.

Pathogens such as *E. coli* enter surface waters from septic and sewage system leaks, pets and livestock and human waste from recreationists flushing of RV waste tanks. The SWRCB in June 2012 issued a *Water Quality Control Policy for Siting, Design, Operation and Maintenance of Onsite Wastewater Treatment Systems (OWTS).* The policy identifies impaired water bodies where OWTS is likely to b e a contributing source of pathogens or nitrogen; no Mono County water bodies are included on that list. The new policy includes a 4-tier system for corrective actions, and will become fully effective over a 15-year horizon.[6]

Big Springs and Deadman Creek provide natural sources of phosphorus, which encourages abundant aquatic plant growth in the upper Owens River and in Crowley Lake. Big Springs was found to be the primary source of phosphorus for Crowley Lake. Hot Creek, the largest tributary to upper Owens River, contributes additional nutrients as well as some heavy metals. Arsenic is found at high levels in some of the Hot Creek geothermal springs within the creek.

In addition to *Basin Plan* water quality objectives, EPA has promulgated water quality standards and numeric criteria for priority toxic pollutants in freshwater and saltwater bodies of California.[7] For freshwater bodies, the standards cover a total of 21 criterion maximum concentrations and 22 continuous concentrations, and cover a wide range of metals and toxic organic compounds including arsenic, lead, benzenehexachloride (found in insecticides) and others.

Walker River Water Leasing and/or Water Purchase Program. In 2002, the Bureau of Reclamation received $375 million in appropriations for the purpose of providing water to at-risk natural desert terminal lakes, including the Walker Lake in Nevada, and Congress appropriated $70 million of those funds to the University of Nevada Desert Terminal Lakes (DTL) Fund to acquire water rights in the Walker River Basin. In 2009, Congress substituted the National Fish and Wildlife Foundation (NFWF) for the University of Nevada as the entity authorized to carry out the Water Acquisition Program and also established the Walker Basin Restoration Program to restore and maintain Walker Lake. This program

[6] SWRCB website (http://www.swrcb.ca.gov/water_issues/programs/owts/docs/owts_policy.pdf) accessed 2-19-15.
[7] EPA, Federal Register, 40 CFR Part 131, Water Quality Standards, Establishment of Numeric Criteria for Priority Toxic Pollutants for California, Rule. May 2000.

included $25 million for a 3-year water leasing demonstration study (to be jointly implemented by NFWF and the Walker River Irrigation District) that could include the participation of willing lessors in the Mono County portion of the Walker River Basin. In 2012, the appropriations act was amended to clarify that DTL funds may be used to lease or purchase water from willing sellers to benefit at-risk natural desert terminal lakes, thereby allowing NFWF to use the water acquisition funds for these purposes. Mono County Resource Conservation District (RCD) subsequently expressed interest in assisting with the tasks necessary to comply with CEQA, and NFWF confirmed its position that local input for the California Programs (i.e., program components in Mono County) would increase the likelihood of successful outcome. Thereafter, the Mono County Board of Supervisors and NFWF in 2012 entered into a Memorandum of Understanding[8] that set forth the following specific objectives:

- NFWF will not pursue lease or purchase water rights agreements in the Mono County portion of the Walker River Basin until the Mono County BOS first reviews and agrees to the scope and nature of the California Program and fulfills associated CEQA requirements.
- The BOS will review and consider approval of a Short-Term Water Leasing Demonstration Program within Mono County as well as other proposals for the California Program.
- NFWF will pay for the Mono County CEQA compliance costs.
- The BOS shall have discretion to approve or modify proposals presented to it under the California Program.
- The MOU will remain in effect through the duration of NFWF's grant with the Bureau of Reclamation.

Pursuant to this MOU, the RCD during 2014 identified potential impacts of the California Program that may conflict with policies and goals identified in the Mono County General Plan, including impacts associated with:

- Temporary reduction of irrigation in the Walker River Basin portion of Mono County
- Permanent reduction of irrigation in the Walker River Basin portion of Mono County
- Temporary cessation of irrigation in the Walker River Basin portion of Mono County
- Permanent cessation of irrigation in the Walker River Basin portion of Mono County
- Release of storage water for the instream needs of the Walker River

Sustainable Groundwater Management Act. Mono County currently has one Groundwater Management District (GMD). The Tri Valley GMD monitors and manages groundwater resources in the Tri Valley. In 2014, the California legislature passed the Sustainable Groundwater Management Act, a major piece of legislation with wide ramifications for future management of water resources. The Act requires establishment of groundwater sustainability agencies (GSAs) consistent with the resources and needs of their communities, with the goal of managing water supplies in a manner that anticipates drought and climate change, thereby enhancing reliability under varied weather patterns.

The Act requires that Counties manage 'high' and 'medium priority' basins through groundwater sustainability plans (to be adopted by January 31, 2022), and encourages that low and very low priority basins also be managed under the sustainability plan. The Act establishes tools for monitoring and reporting groundwater extraction activities, and a fee structure that allows the SWRCB and local Groundwater Sustainability agencies to recover costs of plan investigation, monitoring, enforcement and administration. The Act also allows civil penalties up to $500/AF for unauthorized extractions, and up to $1,000/AF per day for violations that continue after receipt of notice. Mono County has taken steps to comply with the Act including efforts to encourage DWR to split the Tri Valley portion of the Owens Valley Basin into a separate basin. Using identified ranking criteria, the Department of Water Resources (DWR) has assigned a priority status to each of Mono County groundwater basins as shown below (note that DWR is currently reevaluating priorities statewide (including Mono County) and may consider basin boundary adjustments if necessary):

Very Low Priority Basins:	Slinkard Valley, Antelope Valley, Little Antelope, Sweetwater Flat, Bridgeport Valley, Mono Basin, Adobe Valley and Long Valley.
Low Priority Basins:	Fish Lake Valley
Medium Priority Basin:	Owens Valley

[8] *Memorandum of Understanding between the National Fish and Wildlife Foundation and the County of Mono Regarding the Implementation of a Water Leasing Program and/or Water Purchase Program within the California Portions of the Walker River Basin, 13* March 2012.

No Mono County basin has been identified as a 'high priority' nor are there any basins subject to critical overdraft conditions. However, because the Owens Valley has been assigned a 'medium priority,' this region will be subject to the sustainability plan. Mono County may serve as the GSA for most basins; the Tri-Valley Groundwater Management District has been identified as the presumed exclusive groundwater sustainability agency for the basin in its jurisdiction. The SWRCB has authority to intervene if a local agency does not form a GSA and/or fails to adopt and implement a GSP. Plans have been prepared for most watersheds in Mono County, as briefly reviewed below.

East Walker River Watershed Plan (March 2012).[9] The *Plan* notes that the East Walker River watershed has very good water quality and few significant water problems; though not pristine, the watershed is not greatly impaired and generally conforms to the 1972 Clean Water Act goal to be "fishable and swimmable." Several challenges are identified concerning the goal to maintain the existing quality of waters:

- Water Supply: Constraints that may result from transfer of waters from the Walker Lake Basin to benefit Walker Lake in Nevada (please see EIR §7, Cumulative Impacts, for further discussion of this program).
- Water Quality: Bridgeport Reservoir is the focal point of water quality concerns; it has long been eutrophic due to high nutrient levels and occasionally high coliform counts, likely from cattle grazing in the Bridgeport Valley. Valley ranchers are working with LRWQCB and UC Davis to develop control plans specific to each ranch. East Walker River is on the 303(d) list for sedimentation/siltation and turbidity, but this is thought to result from effects of the 1988 release of sediment from Bridgeport Reservoir and the 1997 flood that should abate over time. Mercury and other metals associated with historic mining and ore-processing have been found in some water samples, but the problems do not appear to be severe.
- Vegetation Change: An accumulation of dead fuels and increased forest density have heightened the risk of catastrophic wildfire. Riparian habitat has been locally impacted by roads, trails, buildings, and recreational facilities. Many wetlands have been drained, filled, and converted to other uses, irrigation in Bridgeport Valley has also created or maintained some wetlands. Vegetation clearing may accelerate erosion.

The East Walker River Watershed Plan identifies 7 goals (including for each goal a description of the desired future condition, operational goals and objectives, potential actions and funding sources, potential obstacles and a recommended implementation program). The 7 goals are to (a) reduce agricultural fecal coliform and nutrient pollution; (b) reduce anthropogenic sediment load of streams; (c) maintain and improve riparian habitat; (d) reduce threat of catastrophic wildfire; (e) maintain & improve aquatic habitat of streams; (f) maintain existing wetlands; and (g) reduce human fecal coliform pollution. The Plan also recommends specific actions for various agencies, organizations and groups, including the following specific recommendations for Mono County:

TABLE 4.8-3. East Walker River Watershed Plan Recommendations for Mono County

- Revise General Plan to emphasize ecological values of streams, riparian areas & wetlands
- Consider county ordinance on water supplies for new development relying on legal logic similar to county's mining ordinance (new development must guarantee replacement water supplies if any damage occurs to existing water users)
- Consider county ordinance on riparian protection
- In cooperation with Lahontan RWQCB and U.S. Army Corps of Engineers, create a tracking system for privately-owned wetlands subject to development
- Create a county position of low-impact development specialist to provide design assistance to applicants seeking a grading or building permit
- Plan for additional growth of Bridgeport north along State Route 182

Groundwater Management Plan for the Mammoth Basin Watershed (July 2005).[10] Mammoth Community Water District (MCWD) has provided surface and groundwater supplies to the community of Mammoth Lakes since 1958. As of 2005, the District maintained 8 production wells that provided nearly half of the water needed by the Town under

[9] Inyo Mono IRWMP, *East Walker River Watershed Plan*: http://inyo-monowater.org/wp-content/uploads/2011/09/E-Walker-Plan-FINAL.pdf.
[10] MCWD, *Groundwater Management Plan for The Mammoth Basin Watershed,* July 2005.

normal precipitation year conditions, and nearly 70% of water needed during multiple dry year conditions. MCWD completed the 2005 Groundwater Management Plan following a grant award from the Department of Water Resources that enabled the District to also expand monitoring of groundwater and surface water resources, and develop a groundwater model. In 1993, following approval in 1992 of Assembly Bill 3030 (AB 3030, the Groundwater Management Act), MCWD adopted an ordinance covering private groundwater wells in the District boundaries. The ordinance includes requirements for permits, permit fees, environmental review, and well development and abandonment standards. MCWD's groundwater management plan generally follows guidelines set forth in AB 3030.

The Mammoth groundwater basin is located largely in the central part of the Mammoth watershed. Mammoth Creek flows through the center of the area and drains the upper Lakes Basin and Old Mammoth, an area of about 34.5 square miles. Geothermal groundwater is also extracted and re-injected in the extreme eastern portion of the western basin area. Surface water drainage includes 6 sub-drainage areas of the Mammoth Basin. The primary basin recharge area includes the western section of the Mammoth Basin and Mammoth Creek. Average annual precipitation ranges from about 42.5" at Mammoth Pass (9,500 ft) to 10" at Crowley Lake dam (in the extreme eastern part of the basin). Groundwater recharge is derived from direct percolation, infiltration of snowmelt and some summer rainfall along Mammoth Creek and minor tributaries. Multiple groundwater systems appear to be present in the Mammoth groundwater basin due to the complex geology, hydrology, and hydrogeology of the area, including 2 distinct aquifer systems in the area where the District produces water. MCWD estimates that total groundwater storage of the Mammoth Basin is about 242,600 AF; useful storage is about 24,300 AF. Based on annual groundwater monitoring reports from 1993 through 2004, MCWD has been unable to detect a connection between District groundwater pumping and streamflows in Mammoth Creek or springs in the Mammoth Basin.

The Plan identified 3 primary groundwater management objectives for the Mammoth Basin: preservation of water quality, water conservation, and prevention of impacts to surface water. Measures to pursue these objectives included monitoring, conservation, control of saline (i.e., mineral) water intrusion, identification/management of wellhead protection (WHPA) and recharge areas and potential contamination sources, permit requirements for development of private wells, characterization of groundwater contaminant sources (leaking tanks discharging petroleum products or solvents and the application of pesticides and fertilizers), and a well abandonment and well destruction program. The Plan identified industrial development and golf course irrigation with recycled water as land uses that have potential to adversely impact groundwater resources; additional paved surfaces were also cited as having the potential to allow non-point source contaminants to enter surface water and groundwater. Recognizing that drought production rates are typically reduced due to lower groundwater levels, MCWD reduced its estimate of reliable annual groundwater extractions during periods of multi-year drought (the 'safe yield' of the basin) to 3,260 AFY.

Mammoth Community Water District Urban Water Management Plan (UWMP), Draft, 2010.[11] The UWMP s is a long term planning document used by California water agencies to assure water supply reliability; the document considers future land use planning and development levels and associated capital investment requirements. The UWMP horizon is 20 years, and state law requires that the Plans be updated every 5 years (the District's next UWMP update will be available later this year). The Water Conservation Bill of 2009 requires a statewide 20 percent reduction in urban per capita water use by December 31, 2020. To meet this goal, every urban retail water supplier must develop and report a baseline daily per capita water use and a future 2020 compliance daily per capita water use to achieve the 20% reduction in per capita water use.

The 2010 UWMP concluded that MCWD has adequate water supply (including surface water, local groundwater, and recycled water) to meet community needs under the full range of water year types, including both the severe one year and sustained multi-year droughts. This is primarily due to the availability of local groundwater resources, which provide 40% of supply under average conditions, nearly 90% of the supply in a severe 1-year drought, and 60% of supply over a 3-year sustained drought. The Plan notes that this long range projection could be significantly impacted by future changes in demand (particularly related to Town land use policies and development densities) and/or supply. Supply variables center on managing the disparity between supply and demands, since available surface water is not used by

[11] MCWD, *Draft 2010 Urban Water Management Plan,* October 2010.

MCWD when available, and surface water is not always available when needed. Climate change impacts could further impact surface water supply, as could legal challenges, expansion of geothermal energy production, and changes in surface water storage capacity and recycled water use and production. To optimize supply reliability and state-mandated reductions in per-capita use, the UWMP outlined both adaptation strategies (to change water supply, management infrastructure, and customer use characteristics) and mitigation strategies (to reduce GHG emissions).

Mono Basin Watershed Management Plan (Mono County, 2007).[12] The 2007 Watershed Management Plan was based on results of a 2006 watershed assessment for the Mono basin that sought to describe and determine causative factors for known water quantity and quality problems. As noted therein, the plan has no authority in itself; implementation of suggested policies and actions depend on decisions of local jurisdictions, agencies, non-profit organizations, and private citizens. A primary recommendation is that the Mono County Collaborative Planning Team assumes the role of overseeing implementation and revision of this plan. The watershed assessment found that the Mono basin has very good water quality but has serious habitat problems resulting from water diversions. The report identifies maintaining the current high quality of waters as a primary challenge, noting that water quality and aquatic habitat are at risk from careless development and construction of roads and structures.

Issues and recommendations contained in the report include: (a) Water supply for the June Lake area: Continue and expand water conservation efforts of the June Lake Public Utility District; (b) Conversion of wetlands: Emphasize importance of wetlands in Mono County General Plan, Develop and implement a tracking system between Mono County, Lahontan RWQCB, and U.S. Army Corps of Engineers to ensure compliance with existing regulations, and use the BLM-initiated land-tenure adjustment program to trade privately-owned wetland parcels for publicly-owned parcels that could be developed with minimal environmental consequences; (c) Excessive sediment in tributaries: reroute roads away from riparian zones, close rarely used roads, stabilize fords, culverts, and bridges to reduce impact of road-related erosion, and implement low impact development guidelines; (d) Degradation of riparian habitat: Move roads, trails, and facilities out of riparian zone, implement low-impact development guidelines; (e) Fecal contamination: Build additional outhouses and RV dump sites in high-use areas, and educate traveling public about sanitation principles similar to wilderness users; (f) Contamination from fertilizers & pesticides: Educate public to reduce use of household & horticultural chemicals; and (g) Threat of catastrophic wildfire: Continue and greatly expand the fuels management program of the INF, continue and expand the community-based fire-safe program, adopt recommendations of the 2006-2007 wildfire hazard study project. The report also identifies potential problems of the future including (a) Erosion from OHV use in channels and riparian areas; (b) Future mining; (c) Future round of small-hydro proposals; (d) Leaching of pollutants from Pumice Valley landfill; (e) Failure of poorly located and/or poorly maintained septic systems, and (f) Groundwater contamination by gasoline from historic tanks and spills.

The report also recommends specific actions for various agencies, organizations and groups, including 5 specific recommendations for the Mono Basin that are identical to recommendations contained in the East Walker River Watershed Plan (except for the recommendation to plan for additional growth in Bridgeport north along SR 182, which was not included in this Plan); please see Table 4.8-3 above.

North Mono Basin Watershed Analysis Inyo National Forest (2001).[13] The North Mono Basin Watershed Analysis is a compendium and analysis of technical information about the north Mono Basin watershed and landscape. Included in this report is (a) an exhaustive list of information sources, (b) an assessment of hydrologic conditions, (c) a spreadsheet of flows in Mill Creek and Wilson Creek during dry, wet and normal year conditions, (d) a draft analysis of roads in the North Mono Basin, (e) description of riparian vegetation, (f) description of wildlife species in Conway Ranch; and (g) a census of birds in Thompson Ranch.

Mono Basin Watershed Assessment (Mono County, 2007)[14]. This 2007 report describes the 800-square mile (677 sq. mi. in California) watershed influences the quantity and quality of water that flows into Mono Lake. The assessment

[12] Mono Basin Watershed Plan Management Plan March-2007.
[13] INF, *North Mono Basin Watershed/Landscape Analysis Appendices,* 2001. Prepared by Rick Kettleman; accessed at IM-IRWMP website: http://inyo-monowater.org/resources/library/ on 3-27-15.
[14] Mono Co. Planning Dept, *Mono Basin Watershed Assessment,* 2007. IM-IRWMP website: http://inyo-monowater.org/resources/library/ on 3-27-15.

summarizes publicly-perceived problems and issues including (a) **Water Quantity**: This primary issue concerns how much water flows into hypersaline Mono Lake and how this influences the rise and fall of the lake level. The report notes that from 1941 through 1990, most flows from the main tributaries were, and the lake level fell from an elevation of 6,417 feet to 6,372 feet. When diversions were curtailed, the lake level rose to 6,484 feet in 2006. More recently, concern has be expressed over the distribution of water between Mill Creek and Wilson Creek in the northwestern part of the basin; (b) **Water Quality**: Although comparatively little concern has been expressed regarding water quality in Mono Basin streams, a few issues have surfaced such as sedimentation of Silver Lake, contamination of drinking water supplies in Mono City, and microbial pollution of backcountry streams. (c) **Aquatic Habitat**: aquatic habitat degradation below the LADWP diversions was a key reason for curtailing diversions; many stream reaches were wholly without water, causing extreme impacts to habitat. Efforts have since been made to restore affected channels. (d) **Recreation:** Water-related recreation issues in Mono Basin are associated with recreational fishing in Rush and Lee Vining creeks and management of the water level in Grant Lake. (e) **Wildlife:** Fire suppression during the 20th century has allowed fuel loads to build, creating a potential for catastrophic fires in parts of the Mono Basin. Wildfires threaten streams and aquatic habitat by contributing to increased erosion and sediment transport. (f) **Invasive Species:** Invasive species in the Mono Basin include salt cedar, soapwort, woolly mullein, Russian thistle, cheatgrass, Russian olive, and others, all of which have implications for terrestrial and aquatic ecosystems. The report identifies specific concerns for consideration by Mono County Planning including:

- Water availability for community infill
- Water quality concerns in individual wells and community supplies
- Long-term effectiveness of septic tanks and leach fields
- Erosion from construction activities

Upper Owens River Watershed Assessment (2007).[15] This report describes how the 380-square mile watershed influences the quantity and quality of water that flows into the upper Owens River above the Crowley Lake dam. The assessment summarizes publicly-perceived problems and issues including (a) **Water Quality**: The primary water issue is how best to supply water for the town of Mammoth Lakes without adversely affecting aquatic habitat in Mammoth Creek or water quantity and/or temperature at the Hot Creek hatchery springs. This is a long standing concern that has become more acute with the town's growth. (b) **Water Quality**: Many of the constituents of concern in area water supplies (particularly phosphorus, arsenic, and mercury) occur naturally due to local geology. These substances may limit uses of the water, but are not readily addressed by watershed management practices. Summer water temperatures in some stream segments, and overall sediment loads, have increased due to human activities in the watershed; both impacts could be reduced by minimizing disturbance of riparian areas. (c) **Aquatic Habitat**: aquatic habitats in Mammoth and Hot Creeks have been a matter of public concern since the 1970s when diversions from Mammoth Creek for public water supply increased dramatically; upper Owens River has been used as a canal for diversions to Los Angeles since 1941, and the channel of the upper Owens River and the Long Valley reservoir have been used to store and move water between the Mono Craters diversion tunnel and the Owens Gorge. These activities have impacted the geomorphic and habitat characteristics of the upper Owens River. (d) **Recreation:** Water-related recreation issues in the Mono Basin are associated with recreational fishing in the Owens River and its principal tributaries. Some areas have been contaminated by indiscriminate human waste disposal. (e) **Wildfire**: Fire suppression during the 20th century has allowed fuel loads to build, creating potential for catastrophic fires in parts of the Mono Basin that threaten streams and aquatic habitat by contributing to increased erosion and sediment transport. (f) **Invasive Species**: Introduced trout, now considered integral to area waters, have altered the ecology of watershed streams and lakes. Other exotic species, such as the New Zealand mud snail and tiger salamander, are considered to be threats to the fish. The report identifies specific concerns for consideration by the county including:

- Water availability for community infill
- Water quality concerns in individual wells and community supplies
- Long-term effectiveness of septic tanks and leach fields
- Erosion from construction activities

[15] Mono County Planning Department, *Upper Owens River Watershed Assessment,* 2007. accessed at IM-IRWMP website: http://inyo-monowater.org/resources/library/.

Upper Owens Watershed Management Plan (Mono County, 2007)[16]. The 2007 Upper Owens Watershed Management Plan was based on results of the 2007 watershed assessment for the Mono Upper Owens River (see above) that sought to describe and determine causative factors for known water quantity and quality problems. As noted therein, the plan has no authority in itself; implementation of suggested policies and actions depend on decisions of local jurisdictions, agencies, non-profit organizations, and private citizens. A primary recommendation is that the Mono County Collaborative Planning Team assumes the role of overseeing implementation and revision of this plan. The watershed assessment found that the Mono basin has very good water quality but has serious habitat problems resulting from water diversions. The report identifies maintaining the current high quality of waters as a primary challenge, noting that water quality and aquatic habitat are at risk from careless development and construction of roads and structures.

Issues and recommendations contained in the report include: (a) **Water Supply:** Water supply for the Town of Mammoth Lakes may be insufficient to meet anticipated future demands due to growth and lack of adequate storage; (b) **Water quality:** Water quality (particularly in Mammoth and Hot Creeks) has been impacted by erosion and sedimentation from road and building construction; (c) **Nutrients:** Nutrients have been released into Hot Creek from the fish hatchery, and microbial contamination has resulted from careless disposal of human and pet wastes; there is also concern about the effectiveness of household septic systems and potential contamination from excessive use of fertilizers. High concentrations of arsenic and nutrients in Hot Creek and the upper Owens River appear to have natural sources, with little remediation potential; (d) **Vegetation:** Vegetation changes have occurred as a result of wildfires, alteration and loss of riparian vegetation due to construction and use of roads, trails, buildings, and recreational facilities in the riparian zone; some wetlands have been drained, filled, and converted to other uses; (e) **Clearing:** extensive vegetation clearing for fire safety may accelerate erosion, and wetland areas remain at risk from drainage and conversion to other uses. Land in the upper Owens River watershed could be subject to development if sold by LADWP. Some significant knowledge and information gaps are identified in this report including:

- Insufficient water quality data to evaluate trends and identify most sources of contaminants; scant understanding of the sediment budget of Mammoth Creek and Hot Creek; and scant understanding of the groundwater system and stream-groundwater interactions in Mammoth Creek watershed; these gaps may persist due to the complex underlying geology.
- Understanding of the groundwater system serving the community of Hilton Creek / Crowley Lake is insufficient to guarantee adequate water quality for continued growth in that area, and it cannot be assured that the reliability of septic systems is adequate to avoid contamination of nearby wells and streams.
- The long-term effectiveness of the stormwater collection and detention system for the town of Mammoth Lakes has not been demonstrated to minimize or eliminate contamination of lower Mammoth Creek and Hot Creek with sediments and other pollutants.
- The hydrologic and ecologic effects of climatic variability and potential trends in climate within the upper Owens River watershed are unknown and warrant contingency planning.

The Upper Owens Watershed Management Plan identifies 8 goals (including for each goal a description of the desired future condition, operational goals and objectives, potential actions and funding sources, potential obstacles and a recommended implementation program). The 8 goals are to (a) Balance water demand with environmentally acceptable water supply for town of Mammoth Lakes; (b) Maintain & improve aquatic habitat of Mammoth & Hot Creeks; (c) Maintain existing wetlands; (d) Reduce fecal coliform pollution; (e) Reduce nutrient load in streams; (f) Reduce anthropogenic sediment load of streams; (g) Maintain and improve riparian habitat and (h) Reduce threat of catastrophic wildfire. The report also recommends specific actions for various agencies, organizations and groups, including 5 specific recommendations for Mono County that are identical (except for the recommendation to plan for additional growth in Bridgeport north along SR 182), plus an additional recommendation that small water-supply districts and companies should explore, under County direction, means to establish greater cooperation, coordination and alliances with MCWD.

[16] Inyo Mono IRWMP, *Upper Owens River Watershed Management Plan, March 2007: http://inyo-monowater.org/wp-content/uploads/2011/09/Upper-Owens-Watershed-Management-Plan-3-07.pdf*. .

Walker River Geographic Response Plan (Draft, 2006).[17] This plan establishes policies, responsibilities and procedures for dealing with hazardous materials incidents in the Walker River watershed, with a primary goal of protecting public safety while minimizing or avoiding impacts to the Walker River, its tributaries, reservoirs, and irrigation ditches and canals associated with the river. The Response Plan is comprehensive and detailed with sections providing a plan overview, an 'Immediate Action Guide', procedures for notification, maps, river response strategies (including details for individual waters in the planning area), and supporting documentation for use in emergencies (general information, resources, roles and responsibilities, relationship to other plans, forms, an explanation of acronyms, and administration procedures).

West Walker River Watershed Assessment (Mono County, 2007).[18] This report describes how the 410-square mile watershed of the West Walker River above Topaz Reservoir influences the quantity and quality of water that eventually flows into West Walker River. The assessment notes that the West Walker River contributes more than half of the streamflow in the entire Walker River system that drains to Walker Lake in Nevada. Water rights conflicts between California and Nevada, coupled with the declining level of Walker Lake, have created challenges for water management. Throughout the basin, efforts are under way to restore viable populations of Lahontan cutthroat trout (a USFWS threatened species), and the California Unified Watershed Assessment designates West Walker River as a Category One watershed (i.e., does not meet clean water and other natural resource goals and needs restoration). LRWQCB lists sedimentation, agricultural drainage, and water diversions as the primary water-quality problems in the West Walker River, and the State of Nevada considers water crossing the state line to not support beneficial uses because of excessive nutrient load. Toxic metals suspected to be leaching from old mine tailings have been found in several tributaries to West Walker River, and LRWCB has expressed concerns about possible groundwater contamination in and near the MCMWTC facility at Pickel Meadow. Excessive sediment levels have been noted in basin tributaries, and stream channels are continuing to adjust to changes that occurred during a large flood in 1997.

Other concerns documented in this report include (a) **Habitat**: a decline in riparian habitat quality (due to loss of hardwoods, invasion of riparian meadow ecosystems by conifers and roads and grazing), reduced populations of mountain yellow-legged frog and Yosemite toad (as has been true throughout the Sierra Nevada), reduced habitat for the native Lahontan cutthroat trout due to streamflow changes, channel conditions and overfishing as well as predation by and competition with introduced trout species. The loss of over 90% of the Lahontan cutthroat trout population has prompted a recovery plan that recommends removal of non-native trout from selected stream segments as a critical recovery strategy; (b) **Recreation**: recreational use is impacting watershed values in parts of the West Walker basin, including soil compaction, stream bank erosion, loss of vegetation, and water quality degradation from poor sanitation; conflicts have arisen between recreation fishing and restrictions for recovery of Lahontan cutthroat trout and amphibians in a few designated aquatic refuges. (c) **Wildfire**: fire suppression has altered fire regimes throughout the watershed resulting in denser timber stands, higher fuel loadings, and the invasion of non-fire resistant species, increasing the risk of extreme fires that threaten cultural resources, wildlife, water quality, scenic quality, and facilities. (d) **Invasive species:** have impacted and/or displaced native plants in some areas, including impacts as noted above to the native cutthroat trout and amphibian populations.

West Walker River Watershed Management Plan (Mono County, 2007).[19] This Watershed Management Plan was based on results of the 2007 watershed assessment for the West Walker Watershed (see above). The Plan found that the West Walker River watershed has very good water quality but notes that a century of agricultural uses has greatly altered Valley vegetation, soils and hydrology; roads in the riparian zone are cited as the greatest human impact upstream of Antelope Valley.

Issues and recommendations contained in the report include: (a) **Water Supply**: A need for additional downstream water to reduce the salinity of Walker Lake in Nevada; (b) **Water Quality**: The West Walker River is on the 303(d) list for sedimentation/siltation. Though much of the sediment load can be traced to the 1997 flood, other factors have

[17] Walker River Geographic Response Plan Draft, Mono County, California and Douglas and Lyon Counties, Nevada May 2006. Prepared by: Carson & Walker Rivers Area Committee (CWRAC). Accessed at IM-IRWMP website: http://inyo-monowater.org/resources/library/ on 3-27-15.
[18] Inyo Mono IRWMP., *West Walker River Basin Watershed Assessment*, March 2007: http://inyo-monowater.org/resources/library/ on 3-27-15.
[19] Inyo Mono IRWMP., *West Walker River Watershed Management Plan,* 2007:: http://inyo-monowater.org/ resources/library/.

contributed including reconstruction of US 395 and other road and building construction. Additionally, nutrients and coliform are assumed to be present in agricultural runoff, microbial contamination of streams is assumed to be caused by careless disposal of human and pet wastes, there is some uncertainty about the long-term effectiveness of household septic systems, and there is potential for contamination from excessive use of fertilizers; (c) **Vegetation Changes**: The risk of catastrophic wildfire is linked to the accumulation of dead fuels and increased density of forests, woodlands, and shrublands. Riparian vegetation has been lost by physical flood damage in Walker Canyon and Antelope Valley, and impacted by livestock access to the West Walker River channel as well as local impacts from the construction and presence of roads, trails, buildings, and recreational facilities. Some wetlands have been drained, filled, and converted to other land uses, while irrigation in Antelope Valley has created or maintained other wetlands. (d) W**atershed problems and risks**: extensive clearing of vegetation and leaf litter for fire safety may lead to accelerated erosion, and some wetlands remain at risk of drainage and conversion to other uses. Knowledge and information gaps cited in the report include:

- Insufficient water quality data to evaluate trends and identify most sources of contaminants.
- The West Walker River watershed sediment budget is insufficiently understood to implement a TMDL program.
- Nutrient cycling, retention, and release on Antelope Valley agricultural lands are insufficiently understood to know whether a significant pollution problem exists and what changes in practices would be most effective.
- Antelope Valley stream-groundwater interactions are insufficiently understood to predict the effects of increased groundwater pumping.
- Long-term reliability of septic systems with respect to contamination of nearby wells and streams is unknown.
- The hydrologic and ecologic effects of climatic variability and potential trends in climate within the watershed are unknown and warrant contingency planning.

The report also recommends specific actions for various agencies, organizations and groups, including 5 specific recommendations for Mono County that are identical to recommendations for the other agencies (except for the recommendation to plan for additional growth in Bridgeport north along SR 182), plus an additional recommendation that small water-supply districts and companies should explore, under county direction, means to establish greater cooperation, coordination and alliances with MCWD.

The West Walker River Watershed Management Plan identifies 6 goals (including for each goal a description of the desired future condition, operational goals and objectives, potential actions and funding sources, potential obstacles and a recommended implementation program). The 6 goals are to (a) Reduce the anthropogenic sediment load of streams; (b) Maintain & improve aquatic habitat along all streams; (c) Reduce threat of catastrophic wildfire; (d) Maintain and improve aquatic habitat of streams; (e) Maintain existing wetlands; and (f) Reduce fecal coliform pollution. The report also recommends specific actions for various agencies, organizations and groups, including 5 specific recommendations for Mono County that are identical (except for the recommendation to plan for additional growth in Bridgeport north along SR 182) to recommendations contained in the East Walker River Watershed Plan; please see Table 4.8-3 above.

Integrated Regional Water Management Plan (IRWMP).[20] The IRWMP is a comprehensive program with broad goals that include sustainable use of water, reliable water supplies, improved water quality, environmental stewardship, efficient urban development, sustainable agriculture, and a strong economy. The Inyo-Mono IRWMP is a collaborative effort that includes participation by federal, state and local governments, local tribes and others. The General Plan and IRWMP share common goals that focus on maintaining high water quality and adequate water supply, protecting water-dependent natural resources, ensuring an adequate infrastructure for wastewater and sewer and fire protection needs, stormwater runoff management, and tools to manage groundwater supply, extraction, monitoring and contamination. IRWMP participation enables the County to identify and characterize water resources as well as the pressures that jeopardize long-term water security. The IRWMP also incorporates a process to gather, maintain and monitor data, tools for responsible interagency governance, resource management strategies, financing methods and sources, a

[20] Inyo-Mono Regional Water Management Group, DWR, CalTrout, *Integrated Regional Water Management Plan,* October 22, 2014.

detailed implementation plan, a list of specific projects to be pursued, and objectives and policies to achieve the broad goals identified above.

The Inyo-Mono planning region is part of the arid lands of the western states. Because significant runoff waters are exported out of the region, water supplies have long been a limiting factor. The physical geography of the region is exceptional in its diversity (including the highest and lowest points of the lower 48 states), and characterized by little direct precipitation but considerable snowmelt runoff from the Sierra Nevada. The Inyo-Mono IRWM planning region comprises all of Mono and Inyo counties as well as portions of San Bernardino and Kern counties – roughly 15,000 square miles of land area in whole including 8 large watersheds, none of which have a natural ocean outlet. The hydrologic linkages, scale and boundaries of this region facilitate an integrated approach to water resources management, and the Plan specifically notes that the "maximum opportunity for integration" may occur at the level of county government whereby Inyo and Mono Counties take the lead in achieving IRWMP goals. The planning region is wholly contained in the LRWQCB boundaries, and the 2005 Lahontan '*Basin Plan'* is the foundational reference document for the IRWMP. The IRWMP assumes few major changes in land use and a population growth rate much lower than the state average over the twenty-year plan horizon (through 2034).

Major drainage systems in the region are the Walker and Owens River systems (in Mono County), and the Amargosa river system (Inyo County). The Walker River system flows from the eastern slope of the Sierra Nevada into Nevada where it terminates at Walker Lake. Prior to the construction of the Los Angeles Aqueduct, the Owens River historically terminated at Owens Lake; presently, the Los Angeles Aqueduct is the sole means by which runoff from the region can drain to the Pacific Ocean. Numerous other internally drained basins exist wholly or mostly within the region. Naturally occurring perennial lakes are uncommon except at high elevations in the Sierra Nevada and in the adjacent valleys receiving runoff from the eastern slope of the Sierra Nevada. The largest natural lake in the region is Mono Lake. Surface water is rare and ephemeral in the arid desert basins south and east of Owens Valley.

The 2014 IRWMP indicates that neither Mono nor Inyo Counties have adopted Groundwater Management Plans (which use existing government bodies and authorities to monitor and manage groundwater resources). However, under the Sustainable Groundwater Management Act of 2014, Mono County has prepared a Groundwater Management Plan, as described more fully in the section on Groundwater Management).

Water storage and transfers in the Inyo-Mono IRWM planning area are dominated by the Los Angeles (LA) Aqueduct system, and Los Angeles' land and water ownership underlie many water management issues in the western part of the Inyo-Mono IRWM planning region. LADWP diversions from the Mono Basin began in 1941 and increased following completion in 1970 of the second Owens Valley aqueduct. Diversions were halted by court order from 1989 to 1994, but resumed in 1995 under SWRCB Decision 1631. Crowley Lake, the main storage in the LA system, was created by construction of Long Valley dam in the early 1940s, and Pleasant Valley Reservoir was built in 1955 to modulate flows released from the hydroelectric facilities in the Owens Gorge. Surface and groundwater exports from Owens Valley to Los Angeles vary greatly from year to year; exports averaged about 356,000 AF between 1970-2011, but have been well below that level since the dry period of 1987 to 1992. Los Angeles' land and water ownership and extensive infrastructure along the east slope of the Sierra Nevada link many water management issues in the western part of the Inyo-Mono IRWM region and to IRWM planning regions in southern California. Other entities with facilities include SCE (which operates a series of dams and powerhouses on Mill Creek, Lee Vining Creek, Rush Creek, and Bishop Creek), and MCWD (which regulates storage in and discharge from a relatively small lake above Mammoth Lakes).

The climate and hydrology of the Inyo-Mono region comprises two broad zones: eastern Sierra Nevada and northern Mojave Desert. Mono County is entirely contained within the eastern Sierra Nevada zone, most of which has a Mediterranean-type climate (wet, cool winters and warm, dry summers) with little precipitation due to its location on the lee side of the mountains (i.e., the orographic rain-shadow effect). The storm season extends from November through March in most years, with an average of 15-20 storms each winter and frequent extended dry periods. Snow levels above 5-7,000 feet are typical for most winter storms, but the amount of precipitation is highly variable from year to year. Summers tend to be dry and warm except when monsoon patterns support development of convective thunderstorms. Precipitation rates fall rapidly with eastward distance from the crest. Annual precipitation has mean values exceeding 30" above 9,000' in the Sierra Nevada and tends to decline from north to south. Storms generally

contribute little snowfall after April 1. Water loss to the atmosphere is a large component of the annual water balance of arid watersheds due mainly to low humidity, abundant sun, high air temperatures, and moderate winds. Evapotranspiration in the Mammoth Creek watershed averages 13" annually, with 24" in Mono Basin and 29" in Bridgeport Valley. Open water evaporation is estimated to be in the range of 39-48" per year at Mono Lake, 38" at June Lake, and 20-25" per year at lakes above 9,000 feet.

Studies suggest that both severe floods and extended droughts have occurred in the Inyo-Mono planning area and may recur in response to natural climatic variability and human induced changes in the atmosphere. The most recent glacial advance peaked about 3,000 years ago, with a smaller Little Ice Age between roughly 1300 and 1800 AD. There is strong evidence of severe and persistent drought (140-220 years) in the northern part of the planning area; modern dry spells have been short and wet by comparison. The 1970s and 1980s were marked by a cluster of relatively extreme events, including 5 of the largest and 5 of the smallest snowmelt floods, lending support to theories that extreme events are becoming more common in North America. Changes in the climate of the Sierra Nevada are expected, including rising regional temperatures and declining precipitation.

The IRWMP notes that runoff in the eastern Sierra Nevada is dominated by snowmelt from April through July. Following low discharge during autumn and early winter, the winter snowpack usually begins to accumulate in November, and attains maximum water storage in late March or early April. Streams begin to rise during April with initial snowmelt, and carry sustained high flows through May and into June. Approximately 81% of annual runoff of Mill Creek in the Mono Basin has been attributed to snowmelt, occurring from April through September; the remaining 19% occurs as base flow from October through March.

Water balance is a useful tool for understanding the various quantities of water involved in different parts of the hydrologic cycle within a particular watershed. Water balances show what fraction of incoming precipitation becomes runoff, what fraction is lost to the atmosphere, and what fraction adds to groundwater storage. A coarse water balance of the Walker River basin estimated that 184,700 AF of runoff enter the upper West Walker River and 1,000 AF evaporate before the river enters Antelope Valley, where another 28,700 AF enter and 38,400 AF are lost to evapotranspiration for a net export from Topaz Lake of 174,000 AF. Streamflow in the eastern Sierra Nevada is highly variable over time, as shown in Table 4.8-4.

TABLE 4.8-4. Annual Flow for 5 Upper Owens Tributaries (cfs)

Stream	Mean	Minimum	Maximum
Convict Creek	26	10	75
Glass Creek	8	2	20
Deadman Creek	6	2	20
Rock Creek	26	13	70
Upper Owens R.	30	15	70

The IRWMP references DWR studies that have identified about 60 distinct groundwater basins in the Inyo-Mono IRWM planning area. Groundwater in the West Walker River basin is found in two relatively distinct portions of the hydrologic system: groundwater that is briefly stored as it flows downslope (most of which ends up as streamflow or is taken up by plants and lost to the atmosphere), and long-term storage in fractured bedrock or in the deep groundwater basins of Antelope Valley, Little Antelope Valley, and Slinkard Valley. The groundwater basins of Antelope and Slinkard store an estimated 160,000-170,000 and 72,000 AF, respectively. Groundwater levels in the Antelope Valley range in depth from 48' to 415'; average depth is about 200.' The County currently reports limited well data from each basin to the California Statewide Groundwater Elevation Monitoring (CASGEM); there is currently no other routine monitoring or reporting of well levels to the state although that may change with the recent Groundwater Management Act requirements. Guesses about the storage capacity of the Bridgeport Valley groundwater basin have ranged from 250,000 to 4,000,000 AF.

Groundwater in the Long Valley caldera of the upper Owens River watershed can be grouped into 3 basic categories: a relatively shallow cold-water system (less than 800'), a shallow thermal system, and a deep thermal system. The cooler waters are of excellent mineral quality while the warmer waters have higher concentrations of dissolved solids. More

than 45 wells have been drilled in the Mammoth Lakes basin since 1976, only one of which yielded good quality water at pumping capacities greater than 200 gpm. Wells drilled since 1987 have been more productive.

The main aquifer for the warm springs at the Hot Creek fish hatchery is a fractured basalt flow. Materials filling the Long Valley caldera include interbedded volcanic rocks and sedimentary deposits. Fractured lava flows tend to be more permeable than poorly sorted sediments. The overall circulation of shallow groundwater is from west to east. An order-of-magnitude estimate of the time required for groundwater to circulate through the system from recharge in the west to discharge at the hot springs along Hot Creek is 100 to 1,000 years.

The Owens Valley groundwater basin has a surface area of just over 1,000 square miles and a productive aquifer about 1,200 feet thick. Total storage capacity has been estimated to be between 30 and 35 million AF. Between 1970 and 1990, groundwater pumping by LADWP averaged 104,000 AFY in the Owens Valley, but the average has dropped to 72,000 AFY since Los Angeles and Inyo County settled litigation over the second aqueduct in 1990. The water table in the Bishop City limits is largely within 10' of the surface.

Community Water Systems (CSDs) and Public Utility Districts (PUDs). Water for domestic, commercial, and agricultural uses is supplied from local groundwater and surface water sources, and there are a number of water providers in Mono County. Many of these providers are small private companies or privately owned systems. Public water systems include those owned and operated by the Birchim CSD (Sunny Slopes), Wheeler Crest CSD, Bridgeport PUD, Lee Vining PUD, June Lake PUD, and the Mammoth Community Water District. Each is briefly described below.

Antelope Valley Water District (AVWD). *AVWD is inactive and provides no services at this time; it has no plans for water system improvements or for the provision of future services. AVWD owns no facilities or equipment, but does own a 16' x 668' strip of land running from Meadow Drive to the West Walker River in Walker. Antelope Valley Fire Protection District, which provides fire protection and emergency medical services, is the only other special district in the area. Sewer service and domestic water are provided by individual wells and septic systems, and the Antelope Valley Mutual Water Company provides irrigation water for Valley landowners.*

Birchim CSD*. Birchim CSD was established in 1963 to provide domestic water services for Sunny Slopes. The BCSD boundaries include about 80 acres of land in the community of Sunny Slopes. Birchim CSD provides water for domestic use and fireflow protection to district residents. Water is obtained from 3 wells on district owned land. Untreated well water is distributed to 71 dwellings through a combination of 4" and 6" pipes. Water use varies by year. In 2008, BCSD's annual water demand was almost 17 mg. BCSD distributes water conservation materials and implements water conservation measures including restrictions on the timing of irrigation and a moratorium on lot splits (including construction of "granny" units). BCSD anticipates adding about 20 more connections in the future. As a Community Service District, BCSD is authorized to provide a wide array of services, including water treatment and distribution, fire protection, mosquito abatement services, parks and recreational services, sewage collection and disposal, snow removal/road maintenance, street lighting, police protection, and library services.*

Bridgeport PUD. *The district provides water and sewer services to the Bridgeport townsite, Bridgeport Reservoir subdivision and the Evans Tract and also provides contract water and sewer services to the Indian Housing. Bridgeport PUD has nearly 300 water connections and almost 100 sewer connections. As a PUD, the district is authorized to provide lighting, power, heat, transportation, telephone service, other methods of communication, garbage disposal, golf courses, fire protection, mosquito abatement, parks and recreation, building for public purposes, and drainage improvements.*

Hilton Creek CSD. *Hilton Creek CSD was established in 1963 to provide sewage collection and disposal for Crowley Lake (Hilton Creek). The community of Crowley Lake is part of a larger area known as Long Valley. As a Community Service District, the Hilton CSD is also authorized to provide a variety of services including sewage collection and disposal, snow removal/road maintenance, mosquito abatement, water treatment and distribution, fire protection, parks and recreational services, street lighting, police protection, and library services.*

June Lake PUD. *This district serves a full time residential population of about 400 people, and a substantial visitor population (about 2,500 people) in the June Lake community. The district provides water treatment and distribution services to June Lake Village, West Village, and Down Canyon (all located in the district), as well as areas outside of the district including Pine Cliff, Oh! Ridge, and June Lake Junction. The district provides sewer services to June Lake Village, Down Canyon, and the US Forest Service's Silver Lake Tract, and also provide contract sewer services to USFS properties including Pine Cliff Resort, Oh! Ridge campground, June Lake campground, Reverse Creek (Upper) and Lower Gull Lake campgrounds, Silver Lake campground,*

Grant Lake Marina and several parking facilities along the June Lake Loop. June Lake PUD also provides mosquito abatement services throughout the June Lake Loop and is authorized (as a PUD) to provide lighting, power, heat, transportation, telephone service, other methods of communication, garbage disposal, golf courses, fire protection, parks and recreation, building for public purposes, and drainage improvements.

Lee Vining PUD. *Lee Vining PUD provides water and sewer services to the Lee Vining townsite. As a PUD, the district is also authorized to provide lighting, power, heat, transportation, telephone service, other methods of communication, garbage disposal, golf courses, fire protection, mosquito abatement, parks and recreation, building for public purposes, and drainage improvements.*

MCWD. *MCWD serves a full time residential population as well as business and industrial uses and a large visitor population. MCWD provides water and sewer services to USFS facilities and some permittees in the Lakes Basin, to the Sierra Pack Station area, and Sherwin Creek Campground; MCWD provides water service (only) to Shady Rest Park and Mammoth Creek Park. The district has almost 10,000 water connections and 8,500 sewer connections. Connections are listed in "meter equivalency units", where one meter equivalency unit is equal to one single-family residence using a ¾" water meter. Future proposed connections include nearly 5,500 water connections and 9,400 sewer connections. As a county water district, MCWD is authorized to provide electric power, drainage and reclamation of lands within the district, fire protection, and the construction and operation of recreational facilities; under special legislation, MCWD is also authorized to operate a propane gas distribution service (CWC §31013), and a geothermal heating service (CWC §31013.5).*

Wheeler Crest CSD*. Wheeler Crest CSD provides water service to a full- and part-time residential population in the community of Wheeler Crest. The district currently has about 50 water connections in 2 separate water systems. The Hilltop Estates water system serves 14 lots (all developed) in Hilltop Estates. Water from an artesian well in the west end of Swall Meadows is gravity fed to a 7,500-gallon underground reservoir and from there to individual residences. The Lower Swall Meadows water system serves over 80 lots in the Pinon Ranch and Rimrock Ranch subdivisions, of which 35 lots were developed (about half were later damaged or destroyed in the February 2015 Round Fire). The system includes 2 wells, a 100,000-gallon reservoir at the top of Pinon Ranch, a 120,000-gallon reservoir at the top of Rimrock Ranch, and a gravity-fed distribution system with 22 fire hydrants. The district does not serve any areas outside of its boundaries but does donate water for the Wheeler Crest Fire Protection District's training exercises. The district is also authorized to provide water treatment and distribution, sewage collection and disposal, road maintenance, mosquito abatement, fire protection, parks and recreational services, street lighting, police protection, and library services.*

In addition to the public water companies described above, there are a number of mutual water companies with facilities to provide water in Hilton Creek/Crowley Lake, Paradise, Mono City, the Mountain Meadows subdivision at Crowley Lake, the Pine Glade summer home tract adjacent to Sunny Slopes, the White Mountain subdivision in Chalfant, and Virginia Lakes. Areas not served by a community water system or a mutual water system use wells or, in a few cases, draft off a local surface water source. In addition to private wells on residential parcels, there are over 100 small independent governmental and privately-owned and operated water systems throughout the County. These range from systems operated by USFS at its campgrounds, to a private system at Tom's Place.

4.8.3.3 Hydrologic Threats and Hazards

Mono County Flood Risk. The *Mono County Multi-Jurisdictional Local Hazard Mitigation Plan* (LHMP) states that flood hazards are considered to be among the most prevalent natural hazards in Mono County "*due to their repeated occurrence, the damage they have caused in the past, and the large number of developed parcels within flood hazard areas*." The *Safety Element* notes that Mono County has three watersheds (the Owens River, Mono Lake, and Walker River drainages) and numerous streams, rivers and lakes that are subject to flooding. Average annual precipitation is 30" at the Sierra Crest and 5-10" further east in the valleys. Historical flooding in the county occurred in the Tri-Valley area during the summer of 1989, and floods in January 1997 caused damage to the Town of Mammoth Lakes, Coleville, Walker, and Topaz in northeastern Mono County. Additionally, flash flooding is reported to have occurred in 1978, 1984, 1986, and 1989 including (in the 1989 event) damage to 50 homes from mudflows as high as 18."

Dam Failure Hazards. The Mono County *Multi-Hazards Plan* defines dam failure as the uncontrolled release of impounded water from behind a dam, and notes that flooding, earthquakes, blockages, landslides, lack of maintenance, improper operation, poor construction, vandalism, and terrorism can all cause a dam to fail. Dam failure causes downstream flooding that can affect life and property. Twenty-one dams are located in Mono County, plus one

additional dam (Rock Creek Lake dam, which is located in Inyo County) that is upstream of Mono County properties. Table 4.8-5 lists the 22 dams that are in or may affect Mono County properties.

TABLE 4.8-5: Dams and Reservoirs in Mono County

Reservoir	Dam	Acre-Feet3 Impounded	Stream/River	Owner	Location
Agnew Lake	Agnew	810	Rush Creek	SCE	June Lake
Black Reservoir	Black	185	Black Creek E.	Settelmeyer	Antelope Valley
Bridgeport Resrvr	Bridgeport	42,500	Walker River	WRID	Bridgeport
Crowley Lake	Long Valley	183,000	Owens River	LADWP	Long Valley
Ellery Lake	Rhinedollar	749	Lee Vining Ck	SCE	Lee Vining
Gem Lake	Gem	17,298	Rush Creek	SCE	June Lake
Grant Lake	Grant	47,500	Rush Creek	LADWP	June Lake
Lobdel Lake	Lobdel	640	Desert Creek	Day & Weaver	Antelope Valley
Lower Twin Lake	Lower Twin	2,000	Robinson Creek	Plymouth	Bridgeport
Lundy Lake	Lundy	4,113	Mill Creek	SCE	Mono Basin
Lake Mamie	Lake Mamie	125	Mammoth Ck	USFS	Mammoth
Lake Mary	Lake Mary	125	Mammoth Ck	USFS	Mammoth
Poore Lake	Poore	1,200	Poore Creek	Park Livestock	Antelope Valley
Rock Creek Lake*	Rock Creek	NA	Rock Creek	USFS	Rock Creek Canyon
Saddlebag Lake	Saddlebag	10,077	Lee Vining Ck	SCE	Lee Vining
Sardine Lake	Sardine	385	Walker Creek	LADWP	Mono Basin
Tioga Lake	Tioga	1,254	Lee Vining Ck	SCE	Lee Vining
Twin Lakes	Twin Lakes	150	Mammoth Ck	USFS	Mammoth
Power Plant Pond	Upper Gorge	26	Owens River	LADWP	Long Valley
Upper Twin Lake	Upper Twin	1,500	Robinson Creek	Plymouth	Bridgeport
Waugh Lake	Rush Ck Mdws	5,277	Rush Creek	SCE	June Lake
Walker Lake	Walker	540	Walker Creek	LADWP	Mono Basin

Day & Weaver = E. Day and W.M. Weaver Jr.; SCE = Southern California Edison; LADWP = Los Angeles Department of Water and Power; Settelmeyer = Settelmeyer Ranches Inc. et. al.; Park Livestock = Park Livestock Company; USFS = US Forest Service-Inyo NF; Plymouth = Plymouth Land and Stock Co., et. al.; WRID = Walker River Irrigation District; Rock Creek Lake and Dam are located in Inyo County but would impact Mono County. For more technical information on dams and their drainage areas see: Dams Within Jurisdiction of the State of California (Bulletin 17-93), California Department of Water Resources.

All non-federal dams in California are regulated to prevent failure, safeguard lives and protect property. The supervision is carried out through the Dam Safety Program under the California Department of Water Resources (DWR). The law requires the examination and approval or repair of dams completed prior to August 1929, the approval of plans and specifications for and supervision of construction of new dams and the enlargement, alteration, repair, or removal of existing dams, and the supervision of maintenance and operation of all dams under the state's jurisdiction. Since 1950, there has been only one dam failure in California, and the Dam Safety Program was revised after that failure to address additional concerns. There have been no previous dam failures in Mono County. The EOP notes that failure of any of the dams located in the county could cause flooding. The greatest threat for dam failure in Mono County occurs in late spring, when Eastern Sierra reservoirs are typically full, and dam failures could also be triggered by large earthquakes, major warm storms that cause a rapid increase in runoff, and lack of proper maintenance or operation. The Mono County *Emergency Operations Plan* (EOP)[21] characterizes flooding as a frequent natural hazard and identifies 3 types of floods that impact the Mono County area including dam inundation (see above) and flash and riverine floods as described below.

[21] Mono County, *Emergency Operations Plan,* November 2012.

- Flash Floods and Alluvial Fan Floods. Flash floods are localized floods of great volume and short duration caused by heavy rainfall on a relatively small drainage area; they occur in a short timeframe (usually less than 4 hours), and can create mudflows. Flash flooding is often indicated by alluvial fans (triangular or fan-shaped, gently sloping landforms), as seen in the alluvials fans at Millner Creek south of Hammil Valley, and Montgomery Creek in Benton Valley; both areas are considered at increased flash flood risk, as is the Tri-Valley. Flash flooding occurs most often in the spring and summer from seasonal precipitation.
- Riverine Flooding. Riverine flooding is the most common type of flood event. It occurs when a watercourse exceeds its 'bank-full' capacity, often as a result of prolonged rainfall or snowmelt in combination with saturated soils. Riverine floods may last from a few hours to many days, and are directly affected by the amount and intensity and distribution of precipitation as well as soil moisture content, channel capacity, seasonal variation in vegetation, snow depth and water-resistance of surface materials. In Mono County, riverine flooding typically occurs from November through April. The LHMP indicates that riverine flooding occurs along West Walker River and East Walker River, June Lake Loop and Old Mammoth Creek.

FEMA has prepared Flood Insurance Rate Maps showing 100-year flood hazard areas (i.e., areas with a 1% probability of flooding in any given year). Community areas most likely to be impacted by a 100-year flood include properties along the East and West Walker Rivers, Reversed Creek, and Spring Canyon Creek. Areas in these high hazard zones include Antelope Valley, Bridgeport Valley, the June Lake Loop, and the Tri-Valley area. A 1990 survey by the county found 352 buildings (216 residential structures) located in flood zones within the county. The 1990 survey identified only structures located within the FEMA 100-year floodplain. More recent data developed using the County's GIS system and new FEMA maps show 879 developed parcels located in flood zones in the county and in the town. The assessment identified structures in the FEMA 100-year floodplain (predominantly residential parcels, with large areas of developed agriculture, and limited commercial and mixed use parcels) as well as structures in a 250 foot buffer floodplain area.

Past flooding in the county has caused extensive damage to property, roads, and resource values. Flash flood events occurred in the Tri-Valley in 1978, 1984, 1986, and 1989, causing mudflows down the alluvial fan slopes of the White Mountains, causing damage to roads, agricultural lands, and structures. Flooding in the Walker River Basin in January, 1997, caused extensive damage along the West Walker River in the Walker River Canyon and in the communities along the West Walker River in the Antelope Valley. After the Walker River flood in January, 2001, Mono County identified repetitive loss properties along the Walker River and acquired a number of those properties (11 parcels in Walker, 4 in Mountain Gate, and 1 in Topaz). Floods in January 1997 caused damage to the Town of Mammoth Lakes, Coleville, Walker, and Topaz in northeastern Mono County. Additionally, flash flooding is reported to have occurred in 1978, 1984, 1986, and 1989 including (in the 1989 event) damage to 50 homes from mudflows as high as 18".

The most-recent serious flooding in the county occurred in the Tri-Valley area during the summer of 1989, when rains carried heavy sediment loads from the alluvial fan slopes of the White Mountains into community and agricultural areas. The areas of special flood hazard were identified by FEMA in a 2012 report entitled "*Flood Insurance Study for the County of Mono*," that included a Digital Flood Insurance Rate Map; however, because the report did not provide thorough information regarding base flood elevations, alluvial fans and mudflow hazards, the *Safety Element* concluded that it was of limited use for local development review and planning purposes. The County has identified a significant need to update the flood hazard maps of community areas where these deficiencies exist and where development pressures are greatest (including the Antelope Valley, June Lake, and Tri-Valley areas, as well as Crowley Lake). Six critical facilities are located in flood hazard zones:

- Walker Senior Center;
- California Highway Patrol in Bridgeport;
- June Lake Fire Department;
- June Lake Community Center;
- Mammoth Fire Station; and
- Sheriff's Substation south of Mammoth.

Climate Change. In 2009, a number of agencies convened under the Department of Interior, EPA and the Council on Environmental Quality (the 'Task Force') to analyze and identify key concepts and actions required to ensure that water resources in the US are managed to support adaptation to a changing climate. During their study, the Task Force developed a series of specific recommendations and actions to support planning and management for climate change risks to freshwater resources. Themes emphasized in this report reinforce findings contained in the IRWMP and SNC

reviews including (a) warmer temperatures that will increase precipitation in the form of rain instead of snow, (b) earlier melting of snowpacks, (c) decreases in the size of snowpacks, (d) earlier runoff, and (e) reduced water supply reliability. The report referenced a finding of the U.S. Global Change Research Program (USGCRP) that snowpack reductions will be largest in lower elevation mountains of the Pacific Northwest and California (where snowfall occurs at temperatures close to the freezing point); the report also forecasts with a relatively high level of confidence that California, Nevada and Utah will experience an overall 10-20% reduction in runoff, coupled with more intense storms including a 9% increase in heavy rainfall events in California. Table 4.8-6 summarizes recommendations and actions outlined in the National Climate Action Plan,[22] many of which are to be implemented at the federal and state level.

TABLE 4.8-6: Interagency Climate Change Task Force Freshwater Management Recommendations & Actions

RECOMMENDATIONS AND ACTIONS	
Recommendation 1: *Establish a Planning Process*	**Action 1** Establish a planning process with the capability to identify priority adaptation actions and promote their implementation
	Action 2 Establish an organizational framework to promote effective management of water resources in a changing climate
Recommendation 2: *Improve Water Resources and Climate Change Information for Decision-making*	**Action 3** Strengthen data for understanding climate change impacts on water resources
	Action 4 Create a program to align "hydroclimatic" statistics with today's climate and anticipate future changes
	Action 5 Implement surveillance system for tracking waterborne disease/health threats relevant to climate change
	Action 6 Provide coastal states/communities with information to identify areas likely to be inundated by sea level rise
	Action 7 Establish interagency effort to expedite implementation of the newly developed wetlands mapping standard
Recommendation 3: *Strengthen Assessment of Vulnerability of Water Resources to Climate Change*	**Action 8** Publish guidance on the use of modeled projections for water resources applications
	Action 9 Develop a Federal internet portal to provide info on water resources & climate change
	Action 10 Develop a pilot climate change vulnerability index for a major category of water facilities
	Action 11 Continue development of tools and approaches that build capacity for water institutions to conduct vulnerability assessments and implement appropriate responses
	Action 12 Assess vulnerability of watersheds/aquatic systems in National Forests & Grasslands
	Action 13 Promote free & open access to authoritative climate change science & water resources data
Recommendation 4: *Expand Water Use Efficiency*	**Action 14** Develop nationally consistent metrics for water use efficiency in key sectors
	Action 15 Consider making water use efficiency an explicit consideration in the revision of Principles and Standards for water resources projects and in the new NEPA guidance on climate change
	Action 16 Enhance coordination among current Federal water efficiency programs and create a "toolbox" of key practices
Recommendation 5: *Support Integrated Water Resources Management*	**Action 17** Work with States and interstate bodies (e.g., river basin commissions) to provide assistance needed to incorporate IWRM into their planning and programs, paying particular attention to climate change adaptation issues
	Action 18 Revise Federal water project planning standards to address climate change
	Action 19 Work with States to review flood risk management and drought management planning to identify "best practices" to prepare for hydrologic extremes
	Action 20 Develop benchmarks for incorporating adaptive management into water project designs, operational procedures, and planning strategies

[22] Interagency Climate Change Adaptation Task Force, *National Action Plan, Priorities for Managing Freshwater Resources in a Changing Climate*. October 2011

Recommendation 6: *Support Training and Outreach to Build Response Capability*	**Action 21** Establish a core training program on climate change science for local, Tribal, and State water resources managers
	Action 22 Focus existing youth outreach programs on climate change and water issues
	Action 23 Engage Water Resources Research Institutes at land grant colleges in climate change adaptation research
	Action 24 Increase graduate level fellowships in water management and climate change

4.8.3.4 Surface and Storm Water Drainage[23]

Mono County completed a *Capital Facilities Plan* in 2005 that included a Storm Drainage Master Plan for the June Lake and Hilton Creek areas. The analysis determined that the Hilton Creek and Whisky Creek watersheds cover an area of about 15.5 square miles. Annual average precipitation is 24.5" and 18" for Hilton and Whisky Creeks, respectively; the overall average precipitation for all watersheds entering Crowley Lake is 14.3 inches per year. Existing drainage facilities in the Hilton/Whisky Creek area include drop inlet culvert structures, small culverts (18-30", comprising the majority of area culverts), and large culverts (36"+, are present in 4 of the stream crossings studied).

The June Lake watershed covers an area of about 14.5 square miles with three major drainage watershed components: June Lake, Gull Lake and Reversed Creek. Annual average precipitation in this area is about 27" inches. Existing facilities in the June Lake area include drop inlet culvert structures, small culverts (18-30", comprising the majority of area culverts), and large culverts (36"+, present in 6 of the stream crossings studied).

The Town of Mammoth Lakes is the only area in Mono County with a formal *Master Plan of Drainage*.[24] The plan notes that there are two watershed basins in the Town: the southern part of the community drains the Lakes Basin to Mammoth Creek, and the northern part drains Mammoth Mountain and lands from Meridian Blvd. northward to Murphy Gulch. During high runoff periods, Murphy Gulch eventually flows into Mammoth Creek. The Master Plan divides the basins into 13 sub-areas for analysis: 5 in the southern area, and 8 in the northern area. Storm water runoff flow were developed for the 20-year and 100-year flows. Existing facilities in each drainage area were evaluated for flow capacity, street capacity, and existing flooding problems. In areas where there are existing channels, pipes and streets the facilities were reviewed for a 20-year storm. The added capacity of the street was considered for the 100-year storm events. The *Plan* recommended that the Town implement high priority improvements including new storm drain pipes and assessment of the condition of CMP (corrugated metal drainage pipes), as well as second priority system improvements and general water quality recommendations that included enforcement of BMPs and use of retention and detention basins in construction and for groundwater recharge.

Storm Drain improvements outside of Mammoth Lakes are limited. June Lake Village has a limited storm drain system (catch basins, grates and culverts) that was constructed by Caltrans,[25] and limited storm drain systems/facilities have been developed for projects approved under specific plans, including the Highlands in June Lake and the Sierra Business Park on US 395 across from the Mammoth Yosemite Airport. Lee Vining and Bryant Field Airport facilities both have improvements to divert flows off the runways. Storm runoff in other areas of the County either percolates into the ground or flows into nearby streams.

4.8.4 REGULATORY SETTING

4.8.4.1 Federal Regulations

Clean Water Act. The Clean Water Act of 1972 (CWA) is the primary federal law that governs and authorizes water quality control activities of the U.S. Environmental Protection Agency (EPA), the lead federal agency responsible for

[23] Mono Co. Public Works, *Capital Facilities Plan by Service Category,* Sept. 2005. Prepared by Stantec Consulting and Charles Long & Associates.
[24] Town of Mammoth Lakes, 2005 Storm Drain Master Plan Update, prepared by Boyle Engineering. May 2005. Mammoth Lakes Website: http://www.ci.mammoth-lakes.ca.us/DocumentCenter/Home/View/569.
[25] Mono County, June Lake MEA, 2002; obtained at Mono County website: http://www.monocounty.ca.gov/sites/default/files/fileattachments/planning_division/page/1745/june_lake_master_environmental_assessment_2002.pdf

water quality management; EPA water quality regulations are published in the Code of Federal Regulations, Volume 40 (40 CFR). The CWA sets water quality standards, permit requirements, discharge monitoring requirements, and tools to manage polluted runoff all of which are intended to restore and maintain the chemical, physical, and biological integrity of surface waters. EPA, the federal agency with primary authority for implementing CWA regulations, has delegated to California the authority to implement and oversee most of the CWA programs through the Porter-Cologne Water Quality Control Act of 1969 described below (under State Regulations).

Water Quality Criteria and Standards. CWA §303 requires states to adopt water quality standards for all surface waters of the United States. As defined by the CWA, the standards consist of two elements: (1) designated beneficial uses for surface water bodies, and (2) criteria that protect the designated uses. §304(a) requires EPA to publish advisory water quality criteria that reflect the latest scientific understanding of health and welfare impacts that may result from the presence of pollutants in water. Where multiple uses exist, water quality standards must protect the most sensitive use. §303(d) mandates the creation of a list of waterbodies and associated pollutants that exceed water quality criteria.

National Pollutant Discharge Elimination System Permit Program (NPDES). The NPDES permit program was created to regulate municipal and industrial discharges to surface waters of the US. Federal NPDES permits regulate municipal waste discharges and nonpoint source stormwater runoff. NPDES permits generally identify effluent and receiving water limits for pollutants contained in the discharge; prohibitions on discharges not allowed under the permit; and actions required of the discharger (such as industrial pretreatment, pollution prevention, self-monitoring, etc.). NPDES permit discharge prohibitions and limitations for wastewater treatment plants are intended to maintain public health and safety, protect receiving water resources, and safeguard designated beneficial uses. In November 1990, EPA published regulations establishing NPDES permit requirements for municipal and industrial stormwater discharges. Phase I of the permitting program applied to municipal discharges in urban areas (population over 100,000 persons) as well as stormwater discharges from a variety of industrial activities, including general construction, if the project impact area is than 5 acres. Phase II regulations, effective as of March 2003, required NPDES permits for projects between 1 and 5 acres, and also required small municipality areas (up to 100,000 persons) to develop stormwater management programs. The program is implemented by the Regional Boards; Mono County is part of the Lahontan Region (Region 6), as discussed further under State Regulations.

Section 401 Water Quality Certification or Waiver. CWA §401 requires applicants for a §404 permit (to discharge dredged or fill material into waters of the US) to obtain a certificate stating that the fill is consistent with state water quality standards and criteria. In California, the authority to grant water quality certification or waive the requirements is delegated by the SWRCB to the nine regional boards.

Federal Antidegradation Policy. Antidegradation implementation by the States is based on a set of procedures to be followed when evaluating activities that may impact the quality of the waters of the United States. The federal antidegradation policy incorporates a set of procedures to be followed when assessing activities that may impact the quality of waters of the US. The policy directs states to adopt a statewide policy that includes the following primary provisions: (1) water quality standards to protect existing in-stream uses; (2) protection of high water quality waters (i.e., better than required) unless the state finds that allowing lower water quality is necessary for important local economic or social development; and (3) protection of waters of exceptional recreational or ecological significance.

Safe Drinking Water Act. EPA administers the Safe Drinking Water Act (Public Law 93-523), to regulate contaminants of concern to domestic water supply which are defined as contaminants that pose a public health threat (primary standards) or alter the aesthetic acceptability of the water (secondary standards). The regulations apply to treated water supplies delivered to a distribution system. The maximum allowed contaminant levels (MCLs), as well as the process for setting these standards, are reviewed triennially. EPA has delegated to the California Department of Public Health (CDPH) the responsibility for administering California's drinking-water program. In turn, CDPH is accountable to EPA for program implementation and for adopting standards and regulations that as or more stringent than those developed by EPA. The applicable state primary and secondary MCLs are set forth in CCR Title 22 (Division 4, Chapter 15, Article 4), discussed more fully under the discussion of State Regulations.

§303(d) Impaired Waters List. CWA §303(d) requires states to develop lists of impaired water bodies – i.e., those that would not attain water quality objectives even after routine treatment by point source dischargers (municipalities and industries). For these water bodies, §303(d) requires the state to develop a total maximum daily load (TMDL) for the contributing pollutants. The TMDL is the amount of loading that the water body can receive to comply with water quality objectives, as well as a plan to reduce total loading of the pollutant(s) of concern (from all sources) in order to comply with the water quality objectives. The TMDL must include an analysis demonstrating the link between loading reductions and attainment of water quality objectives. EPA must either approve a state's TMDL or issue its own. NPDES permit limits for listed pollutants must comply with the waste load allocation prescribed in the TMDL.

Federal Emergency Management Agency (FEMA). FEMA administers the National Flood Insurance Program (NFIP) which offers subsidized flood insurance to communities that comply with the FEMA objective to limit development in floodplains; Mono County is a participant in the NFIP. FEMA also issues Flood Insurance Rate Maps (FIRMs) to identify land areas that are subject to flooding, provide flood information and identify flood hazard zones. FEMA sets flood protection design standards with a minimum protection level for a flood that would occur, on average, once in 100 years (the '100-year flood'). NFIP participants must also meet mandated floodplain management criteria. FEMA is also responsible for updating the FIRMs in conjunction with the local agencies that participate in the NFIP.

National Flood Insurance Program (NFIP). The NFIP was created through the National Flood Insurance Act of 1968 with three fundamental purposes: to better indemnify individuals for flood losses through insurance; to reduce future flood damages through State and community floodplain management regulations; and to reduce federal expenditures for disaster assistance and flood control. Although the Act originally allowed provision of subsidized flood insurance for existing structures, FEMA later adopted regulations to make the provision of flood insurance contingent on local adoption of floodplain regulations.

Executive Order 11988 (Floodplain Management). Executive Order 11988 addresses floodplain issues related to public safety, conservation, and economics. It generally requires federal agencies operating in a floodplain (i.e. constructing, permitting, or funding a project in a floodplain) to avoid incompatible floodplain development, comply with NFIP standards and criteria, and restore and preserve natural and beneficial floodplain values.

Flood Disaster Protection Act (FDPA). The FDPA of 1973 was developed in response to shortcomings of the NFIP (shortcomings that became evident during the 1972 flood season) with new provisions prohibiting any Federal assistance (acquisition, construction, financial) within the delineated floodplains of non-participating NFIP communities. The changes also mandated that participating communities carry flood insurance for all acquisitions or developments in Special Flood Hazard Areas (SFHAs), and established standards for improvements, construction, and developments within SFHAs. The new standards included lowest floor and building elevations at or base flood elevation (BFE) or flood-proofed to that elevation, design of foundations and enclosure walls using special openings (to control the entry and exit of flood waters) and flood resistant materials capable of withstanding hydrostatic flood pressure, and restrictions on the use of enclosed areas below the BFE (for parking, access, or storage).

Disaster Relief Act of 1974 and Stafford Act of 1988. The Disaster Relief Act of 1974 expanded the assistance the federal government could provide to individuals, states, and local communities suffering from disasters, including preparedness program, grants, disaster declarations, disaster relief programs and loans to local government to compensate for revenue losses. FEMA was subsequently established in 1979 through Executive Order 12127. To improve the efficiency of state and federal-level involvement, Congress amended the Disaster Relief Act in 1988 by passing the Robert T. Stafford Disaster Relief and Emergency Assistance Act. The Stafford Act constitutes the statutory authority for most Federal disaster response activities especially as they pertain to FEMA (Federal Emergency Management Agency) and FEMA programs. The Stafford Act includes disaster housing and community development programs unique to FEMA, as well as various relief programs administered under the Housing and Urban Development Department (HUD).

U.S. Army Corps of Engineers (USACE). USACE is generally associated with dams, canals and flood protection in the US, but also manages public works projects world-wide. USACE issues permits, under CWA §401 and §404, for the discharge of dredged or fill material into waters of the US, including wetlands, and for water supply projects that involve

instream construction, such as dams and diversion structures. USACE also is responsible for flood control planning and assisting state and local agencies with the design and funding of local flood control projects. The determination of whether an area is a wetland, and applicable permit requirements, is made by the appropriate Corps District Office (Mono County is part of the Southern California Area Office located in Palmdale). The Corps uses 3 wetlands characteristics to make wetland determinations (vegetation, soil, and hydrology), and all three characteristics must be present unless the area has been altered or involves a rare natural situation.

F*ederal Agency Climate Change Adaptation Planning.* The 2010 *Progress Report of the Climate Change Adaptation Task Force* recommended that agencies integrate adaptation into routine planning to optimize resource investment and ensure that Federal programs remain effective in a changing climate. The Council on Environmental Quality (CEC) issued implementing instructions in March 2011, including a requirement that agency-specific climate change adaptation plans be published by June 2012. The effort will be guided by the *National Action Plan* for freshwater resources.

Flood Control Act of 1936. The Flood Control Act authorized civil engineering projects such as dams, levees, dikes, and other flood control measures through the USACE and other Federal agencies. It is one of a number of Flood Control Acts passed on a regular basis by the United States Congress. FCA 1936 placed Federal flood control investigations and improvements under the jurisdiction of the War Department (precursor of the Department of Defense), and it put watersheds, waterflow retardation, and soil erosion prevention under the Department of Agriculture. In whole, the Flood Control Act of 1936 established an enormous commitment by the federal government to protect people and property on approximately 100 million acres. Since 1936, Congress has authorized the Corps of Engineers to construct hundreds of miles of levees, flood walls, and channel improvements and approximately 375 major reservoirs. These engineering projects today comprise an infrastructure rivaled only by the highway system.

4.8.4.2 State Regulations

Sustainable Groundwater Management Act of 2014 (SGMA). The SGMA is a framework for sustainable management of groundwater supplies by local authorities, with a limited role for state intervention only if necessary to protect the resource. The Act requires the formation of local groundwater sustainability agencies (GSAs) to assess conditions in their local water basins and adopt locally-based management plans. The Act allows a 20 year time frame for GSAs to implement the plans and achieve long-term groundwater sustainability. It protects existing surface water and groundwater rights and does not impact current drought response measures. Designed to ensure that future water supplies are reliable, the SGMA is part of a larger, comprehensive water plan for California that includes investments in water conservation, water recycling, expanded water storage, safe drinking water, wetlands and watershed restoration. The legislation lays out a 4-step process and timeline for local authorities to achieve sustainable management of groundwater basins, and also provides tools, authorities and deadlines to take the necessary steps to achieve the goal:

- Step 1: Local agencies must form local groundwater sustainability agencies (GSAs) within two years.
- Step 2: Agencies in basins deemed high- or medium-priority must adopt groundwater sustainability plans (GSPs) within five to seven years, depending on whether a basin is in critical overdraft.
- Step 3: Local agencies have 20 years to fully implement their plan and achieve the sustainability goal.
- State role: The SWRCB may intervene if locals do not form a GSA and / or fail to adopt and implement a GSP.

Assembly Bill 162 (AB 162). This bill requires that General Plan Land Use Elements identify and annually review areas that are subject to flooding as identified in FEMA maps or by the Department of Water Resources (DWR). The bill also requires that the Conservation Element identify rivers, creeks, streams, flood corridors, riparian habitat, and land that may accommodate floodwater for groundwater recharge and stormwater management, and that the Safety Element provide information about flood hazards and establish comprehensive goals, policies, and objectives to protect the community from the unreasonable risks of flooding.

Assembly Bill 70 (AB 70). AB 70 requires a local government to share in the state's liability for flood damages when that local agency's actions increased the state's exposure to flood damages (i.e., as a result of approving new development without considering flood risks). AB 70 imposes the shared liability on the basis of "regulatory liability" wherein local governments have liability only if they fail to do something the law requires. AB 70 gives discretion to the courts to

require a city or county to contribute a fair and reasonable share of the property damage (but not including personal injury damages) caused by a flood if certain conditions are met. The contribution amount is tied to the extent to which the city or county has increased the state's exposure to liability.

Senate Bill 610 (SB 610). PRC §21151.9 and Water Code §10910 et seq. require preparation of "water supply assessments" for large developments, defined as projects of 500+ residences, 500,000+ sf of retail commercial space, or 250,000+ sf of office commercial space. The assessments are to be prepared by public water systems to address whether adequate water supplies are or will be available to serve proposed projects in addition to existing supply commitments and other potential development demands. SB 610 does not include General Plans as projects subject to its requirements, and thus SB 610 is not directly applicable to the current RTP/General Plan Update. However, the requirements would potentially apply to individual future projects proposed under the Draft RTP/General Plan update. Where a WSA concludes that insufficient supplies are available, the WSA must lay out steps that would be required to obtain the necessary supply. WSA content requirements include identification of the existing and future water suppliers and quantification of water demand and supply by source in 5-year increments over a 20-year horizon for average normal, single-dry, and multiple-dry years. The absence of an adequate current water supply does not preclude project approval, but does require the lead agency to address the water supply shortfall in its approval findings, at which time the additional requirements of SB 221 would take effect (see discussion below).

Senate Bill 221 (SB 221). SB 221 requires that a local water agency be notified by a city or county of any proposed residential subdivision with more than 500 units within 5 days of application acceptance as complete. It establishes requirements for determining whether a sufficient water supply exists to support the project, even where the project involves a development agreement. SB 221 applies to the approval of tentative maps for more than 500 residences. Cities and counties must require water supply verification as a condition of project approval; the verification must be completed prior to final map approval and must demonstrate that there is a sufficient water supply for the newly created residential lots, including consideration of effects on other users of water and groundwater.

State Water Resources Control Board (SWRCB). The primary responsibility for protection of water quality in California rests with the SWRCB (also known as the State Board) and 9 Regional Water Quality Control Boards. The State Board sets statewide policy for implementing state and federal laws and regulations, and the Regional Boards adopt and implement Water Quality Control Plans (*Basin Plans*) to address regional differences in water quality, beneficial uses, and water quality problems associated with human activities. Mono County is in the Lahontan Region (LRWQCB), which extends from the Oregon border to the northern Mojave Desert and includes all of California east of the Sierra Nevada crest. Most waters of the North Lahontan region (including Mono County) drain into closed basins that were previously part of Lake Lahontan. Waters of the South Lahontan Basin drain into closed basin remnants of prehistoric lakes. The LRWQCB Board is a 7-member decision making body appointed by the Governor. There are two regional offices (South Lake Tahoe and Victorville). Other California agencies with jurisdiction over water quality regulation include the Department of Public Health (CDPH, for drinking-water regulations), the Department of Pesticide Regulation, the Department of Fish and Wildlife (CDFW), and the Office of Environmental Health and Hazard Assessment.

California Government Code (CGC). The Senate and Assembly bills identified above have resulted in various changes and additions to the California Government Code. Key sections require that revised safety elements must include maps of any 200-year flood plains and levee protection zones within the planning area; lands having inadequate flood protection (as determined by FEMA or DWR) must be excluded from land identified as suitable for urban development within the planning area. In Mono County, FEMA has prepared a 200-year floodplain map for Tri-Valley area, and the Tri-Valley Area Plan policies stipulate that new residential subdivisions shall be approved only when adequate serviees are available.

Potential Flooding-Dam Inundation Act. This act requires owners of dams to prepare maps showing potential inundation areas in the event of dam failure. A dam failure inundation zone is different from a flood hazard zone under the National Flood Insurance Program (NFIP). NFIP flood zones are areas along streams or coasts where storm flooding is possible from a "100-year flood." In contrast, a dam failure inundation zone is the area downstream from a dam that could be flooded in the event of dam failure due to an earthquake or other catastrophe. Dam failure inundation maps

are reviewed and approved by the California Office of Emergency Services (OES). Sellers of real estate within inundation zones are required to disclose this information to prospective buyers

Porter-Cologne Water Quality Control Act. The Porter-Cologne Act is California's statutory authority for the protection of water quality. Under the act, the state must adopt water quality policies, plans, and objectives that protect the state's waters for the use and enjoyment of the people. The act sets forth the obligation of the SWRCB and RWQCBs to adopt and periodically update Basin Plans, required by both the CWA and Porter-Cologne Act, to establish beneficial uses, water quality objectives, and implementation programs for each of the nine regions in California. The act also requires waste dischargers to notify the RWQCBs of their activities through the filing of reports of waste discharge (RWDs) and authorizes the SWRCB and RWQCBs to issue and enforce waste discharge requirements (WDRs), NPDES permits, §401 water quality certifications, and other approvals. RWQCBs also have authority to waive RWDs and/or WDRs requirements for broad categories of "low threat" discharge activities that have minimal potential for adverse water quality effects when implemented according to prescribed terms and conditions.

Water Quality Control Plan for the Lahontan Basin ('Basin Plan'). The Lahontan RWQCB is responsible for a region that includes over 700 lakes, 3,170 miles of streams and 1,581 square miles of ground water basins, with 12 major watersheds (known as "hydrologic units") in the North Lahontan Basin and 3 major surface water systems (Mono Lake, Owens River, and Mojave River watersheds) in the South Lahontan Basin. Most high elevation waters have very good or excellent quality, though soils and waters of the Sierra Nevada have low buffering capacity for acids and the lakes and streams are sensitive to acidification due to deposition of pollutants from urban areas. Many desert waters have naturally high concentrations of salts and minerals (such as arsenic and selenium), and these threats to beneficial uses can be aggravated by geothermal and agricultural discharges, ground water overdraft which concentrates salts, and disposal of stormwater under conditions where it is unlikely to receive adequate treatment by soils and vegetation. The LRWQCB website notes that careful consideration of the relationships between water quality and water quantity will be needed in future planning due to concerns that include projected population increases and associated demands for water, possible future water shortages (due to drought, global climate change, and contamination of some water supplies by toxic substances), and increasing awareness of the environmental values associated with natural water volumes in streams, lakes, wetlands and ground water aquifers. The Basin Plan contains specific narrative and numeric water quality objectives for a number of physical properties (e.g., temperature, dissolved oxygen, turbidity and suspended solids), biological constituents (e.g., coliform bacteria), and chemical constituents of concern including inorganic parameters and trace metals and organic compounds. Water quality objectives for toxic priority pollutants (i.e., select trace metals and synthetic organic compounds) are included in the Basin Plan and the California Toxics Rule described below. LRWQCB is also involved with the Sierra Business Council in the Rivers and Ranches Project, a water quality improvement project designed for private lands impacted by grazing operations (see additional discussion for the Sierra Business Council, under Local Regulations).

California Toxics Rule. In 2000, EPA set numeric water quality criteria for priority toxic pollutants and other water quality standards to be applied to waters in the state of California. EPA took this step based on a determination that numeric criteria are necessary in California to protect human health and the environment. The rule fills a gap in California water quality standards that was created in 1994 when a state court overturned the state's water quality control plans containing water quality criteria for priority toxic pollutants. Since that time, the State of California has been without numeric water quality criteria for many priority toxic pollutants required by the Clean Water Act. These federal criteria are legally applicable in the State of California for inland surface waters, enclosed bays and estuaries for all purposes and programs under the Clean Water Act.

State Nondegradation Policy. In 1968, the SWRCB adopted the Nondegradation Policy as a means to maintain the high-quality waters in California. The Nondegradation Policy states that the disposal of wastes into state waters shall be regulated so as to achieve the highest water quality consistent with maximum benefit to the people of the state and so as to promote the peace, health, safety, and welfare of the people of the state. The policy prescribes the following: Where the existing quality of water is better than required under existing water quality control plans, such quality would be maintained until it has been demonstrated that any change would be consistent with maximum benefit to the people of the state and would not unreasonably affect present and anticipated beneficial uses of such water. Any activity which produces waste or increases the volume or concentration of waste and which discharges to existing high-quality waters

would be required to meet waste discharge requirements which would ensure (1) pollution or nuisance would not occur and (2) the highest water quality consistent with the maximum benefit to the people of the state would be maintained.

California Water Conservation Act. Senate Bill X7-7, enacted in 2009, requires all water suppliers to increase water use efficiency. The legislation is divided into two sectors -- Urban Water Conservation and Agricultural Water Conservation. For urban area, the legislation sets an overall goal of reducing per capita water use by 20% by the end of 2020, with interim goals and enforcement tools to achieve this reduction. Agricultural suppliers are required to adopt agricultural water management plans by the end of 2012, to update those plans by the end of December 2015, and every 5 years thereafter, with enforcement tools to achieve the planned reductions. An urban water supplier is defined as a water supplier (publicly or privately owned), that provides more than 3,000 AF of water annually at wholesale for potable municipal purposes; an agricultural water supplier is a supplier (public or private) that provides water to 10,000 or more irrigated acres (excluding recycled water) and includes distributions for resale to customers. The act applies to regional water resources including stormwater, recycled water, desalination from brackish water, and conjunctive use of surface water and groundwater to maintain safe yield.

Urban Water Management Act. The 1983 California Urban Water Management Planning Act requires each urban water supplier serving more than 3,000 customers or supplying more than 3,000 acre-feet of water annually to prepare, adopt and update its urban water management plan at least once every five years on or before December 31, in years ending in 5 and 0. The plan describes and evaluates sources of water supply, including groundwater; projected water needs; conservation; implementation strategy and schedule. In Mono County, only the Mammoth Community Water District is subject to these requirements, as discussed below under local regulations.

Title 22 Standards. Water quality standards are enforceable limits that identify the designated beneficial uses of water and establish criteria (i.e., numeric or narrative limits) to protect those beneficial uses. The Porter Cologne Act identifies municipal and domestic supply as a "beneficial use" including surface water and groundwater that must be protected against water quality degradation. Maximum contaminant levels, MCLs, components of the drinking water standards adopted by CDPH pursuant to the California Safe Drinking Water Act, are set forth in CCR Title 22, Div. 4, Chapter 15 (Domestic Water Quality and Monitoring). CDPH is also responsible for secondary drinking water standards, established primarily for reasons of consumer acceptance (i.e., taste) rather than because of health issues. Drinking water MCLs are directly applicable to water supply systems "at the tap," i.e. at the point of use by consumers in their home, office, etc., and are enforceable by CDPH and the Mono County Health Department. California MCLs, both Primary and Secondary, are directly applicable to groundwater and surface water resources when they are specifically referenced as water quality objectives in the pertinent Basin Plan. In such cases, MCLs become enforceable limits by the State and Regional Water Boards. Regional Water Boards may also apply more stringent limits to protect all beneficial uses. When fully health protective, MCLs may also be used to interpret narrative water quality objectives prohibiting toxicity to humans in water designated as a source of drinking water in the Basin Plan.

Consumer Confidence Reports. CCR Title 22 requires all public water systems to prepare a Consumer Confidence Report for distribution to customers and to the DHS. The Report provides information about the quality of potable water provided by the water system. It also includes information on water sources, any contaminants detected in the water, the maximum contaminants levels set by regulation, violations and actions taken to correct them, and opportunities for public participation in decisions that may affect the quality of the water provided.

California Department of Health Services (DHS). The DHS Division of Drinking Water and Environmental Management regulates public water systems, certifies drinking water treatment and distribution operators, and provides support for small water systems including subsidized funding for water system improvements under the State Revolving Fund ("SRF") and Proposition 50 programs. The Drinking Water Program also oversees water recycling projects, permits water treatment devices, supports and promotes water system security, and oversees the Drinking Water Treatment and Research Fund for MTBE and other oxygenates.

Irrigated Lands Regulatory Program. Water discharges from agricultural operations in California include irrigation runoff, flows from tile drains, and stormwater runoff. These discharges can affect water quality by transporting pollutants, including pesticides, sediment, nutrients, salts (including selenium and boron), pathogens, and heavy

metals, from cultivated fields into surface waters. Many surface water bodies are impaired because of pollutants from agricultural sources. Groundwater bodies have suffered pesticide, nitrate, and salt contamination. The Irrigated Lands Regulatory Program (ILRP) was initiated in 2003 to regulate agricultural discharges and prevent such discharges from impairing receiving waters.

California Department of Water Resources (DWR). DWR is responsible for preparation of the California Water Plan, management of the State Water Project (SWP), regulation of dams, provision of flood protection, and other functions related to surface water and groundwater resources. These other functions include helping water agencies prepare their UWMPs, which are discussed in §4.13 "Public Services and Utilities."

Recycled Wastewater Requirements. Wastewater recycling in California is regulated under Title 22, Division 4 of the California Code of Regulations under the jurisdiction of CDPH. The intent of these regulations is to ensure protection of public health associated with the use of recycled water. Title 22 regulations establish acceptable levels of constituents in recycled water for a range of uses and stipulate means for ensuring reliability in the production of recycled water. Recycled water is commonly utilized for non-potable uses throughout the state and is an effective means of maximizing use of water resources in water-short communities. CDPH has jurisdiction over the distribution of recycled wastewater and the enforcement of Title 22 regulations. The RWQCB is responsible for issuing waste discharge requirements (including discharge prohibitions, monitoring, and reporting programs). The RWQCB is also responsible for user re-use requirements associated with the implementation of wastewater reclamation projects. Title 17, Division 1 of the California Code of Regulations establishes requirements for protection of potable water systems where there is a potential for cross-contamination with recycled water.

4.8.4.3 Local Regulations

Sierra Business Council. In collaboration with LRWQCB and U.C. Davis, the Sierra Business Council has established the Rivers and Ranches Project[26] [27] to monitor water bodies that may be impacted by grazing operations on private lands, and to assist landowners in implementing management practices to reduce pollutant discharges to surface waters from grazing operations. Participating watersheds in Mono County include Walker River and the Owens River. Project activities include microbial source tracking and monitoring of enteric pathogens and bacterial indicators in order to identify sources of pollution, and collaborating with landowners to provide financial and technical assistance for implementation of sustainable grazing management practices. The program also includes education and outreach for K-12 students in coordination with Future Farmers of America.

Mono County Environmental Health Department. The Environmental Health Department provides program implementation in all environmental health disciplines. Services include planning, inspections, enforcement, and public education in the regulation of food establishments, sewage disposal facilities, water systems, well construction, swimming pools, recreational health facilities, occupied housing, underground storage facilities, solid waste facilities, land use development, rabies and vector control, and the management of hazardous wastes and materials.

Public Works Land Clearing, Earthwork and Drainage Facilities Ordinance. This ordinance (known as the Mono County Grading Ordinance) regulates development activities to prevent erosion and damage to off-site property.

4.8.5 SIGNIFICANCE CRITERIA

Appendix G of the California CEQA Guidelines offer the following criteria for determining the significance of impacts to hydrology and water quality. A project would have a potentially significant impact on hydrology if it would:

a) Violate any water quality standards
b) Violate any wastewater treatment or discharge requirements or require new wastewater treatment facilities.

[26] http://sierrabusiness.org/what-we-do/projects/336-rivers-and-ranches-project
[27] LRWQCB website: http://www.swrcb.ca.gov/rwqcb6/publications_forms/publications/prop84fs.pdf

c) Have insufficient groundwater or surface water supplies available to sustainably serve General Plan land uses from existing entitlements, facilities and resources.
d) Alter existing drainage patterns in a manner that would result in substantial erosion, siltation, flooding or polluted runoff.
e) Place housing or structures in a 100-year flood hazard area as mapped on a Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map.
f) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam
g) Expose people or structures to inundation by seiche, tsunami, or mudflow

4.8.6 ENVIRONMENTAL IMPACTS AND MITIGATING POLICIES AND ACTIONS

IMPACT 4.8(a): Would implementation of the proposed RTP/General Plan Update violate any water quality standards?

POTENTIALLY SIGNIFICANT ADVERSE IMPACTS. Approval and implementation of the *Draft* R*TP/General Plan Update* would allow many types of actions (grading, excavation, removal of vegetation cover, and related construction activities) that have potential to increase runoff, erosion, and sedimentation and thereby adversely impact water quality. Projects that would disturb one or more acres of soil (including projects that would disturb less than one acre but are part of a larger development that in total disturbs one or more acres) must develop and implement at Storm Water Pollution Prevention Plan (SWPPP) under the General Permit for Discharges of Storm Water Associated with Construction Activity. Construction activities subject to this permit include clearing, grading and disturbances to the ground such as stockpiling and excavation (but do include regular maintenance activities). The SWPPP depicts construction site perimeters, drainage patterns, existing and proposed structures, lots, roadways, and storm water collection and discharge points, and must also list the Best Management Practices (BMPs) that will be used to protect storm water runoff and the placement of those BMPs. The SWPPP must also set forth a visual monitoring program, a chemical monitoring if there is a failure of BMPs, and a sediment monitoring plan if the site discharges directly to a water body listed on the 303(d) list for sediment. Section A of the Construction General Permit describes the elements that must be contained in a SWPPP.[28]

Two additional programs have been established in California to manage stormwater discharges. The Municipal Storm Water Permitting Program regulates storm water discharges from municipal separate storm sewer systems (MS4s). MS4 permits were issued in two phases. Under Phase I, which started in 1990, LRWQCB adopted NPDES storm water permits for medium (100,000-250,000 residents) and large (250,000+ residents) municipalities. Most of these permits are issued to a group of Co-permittees encompassing an entire metropolitan area. In 2003, as part of Phase II, the SWRCB issued a General Permit for the Discharge of Storm Water from Small MS4s to provide permit coverage for municipalities with populations under 100,000 (including non-traditional Small MS4s such as military bases, public campuses, and hospital complexes). The Phase II Small MS4 General Permit covers Phase II Permittees statewide. The Phase II Small MS4 General Permit was renewed and became effective during 2013.[29]

The Industrial Storm Water General Industrial Permit is an NPDES permit that regulates discharges associated with 10 broad categories of industrial activities. This permit requires implementation of management measures that meet best available technology economically achievable (BAT) and best conventional pollutant control technology (BCT) standards. The General Industrial Permit also requires development of a SWPPP and a monitoring plan. The SWPPP identifies sources of pollutants and describes how the sources will be managed to to reduce storm water pollution. The General Industrial Permit currently requires that an annual report be submitted each July 1. New regulations that become effective on July 1, 2015 require electronic applications and reporting. Group monitoring is allowed for some

[28] http://www.swrcb.ca.gov/water_issues/programs/stormwater/construction.shtml
[29] http://www.swrcb.ca.gov/centralvalley/water_issues/storm_water/municipal_permits/

types of industrial facility operators.[30] All future projects affecting 1+ acres of land are required by the SWRCB to prepare an SWPPP that includes project specific best management measures to control drainage and erosion.

On a long term basis, many activities and developments allowed under the proposed *RTP/General Plan Update* would have potential to impact waters of the state. Concerns would center on the introduction into state waters of constituents that are associated with urban runoff including sediments, petroleum hydrocarbons, pesticides, fertilizers, and some heavy metals such as lead, zinc, and copper. These pollutants tend to accumulate during dry months, and are often carried in comparatively high concentrations during the early portion of the wet season (a phenomenon generally referred to as the "first flush" of storm events). Development activities will increase the amount and type of runoff generated by increasing the area of impervious surfaces, increasing the volume of runoff pollutants, and increasing the amount of nutrients and other chemicals washed from developed and landscaped areas. Activities that may have potential

As noted in Table 4.8-2 (§303D Impaired Water Bodies), there are a number of water bodies in Mono County that are included in Category 5 (indicating that standards are not being met and a TMDL is required but not yet prepared), including water bodies in or near the communities of Bridgeport and Bodie, Long Valley and Crowley Lake, Mammoth and Paradise. As discussed in EIR §4.1 (Land Use) Impact 4.1(a), most of the changes proposed in the *Draft 2015 RTP/General Plan Update* are, in terms of the 2001 *General Plan,* comparatively minor and a direct result of fine-tuning made possible with use of GIS and polygon analysis, as well as repeal of the Conway Ranch Specific Plan, General Plan Amendments approved since 2001, and refinements to planning area designations and boundaries. Relative to existing population levels, however, both the existing and the proposed *RTP/General Plan* would allow for substantial growth. The level of development contemplated in the *Draft RTP/General Plan Update* will have a significant potential to contribute to further impairment of these already impaired water bodies through added sediment and nutrient loading from short-term erosion during construction, and long-term erosion from cut/fill slopes and vehicle travel over unpaved surfaces, wastewater disposal systems, fertilizers and other point and nonpoint source discharges. Based on prior communications from LRWQCB, increased sediments and nutrient loads to tributaries of Bridgeport Reservoir would be considered particularly significant and adverse in terms of direct and cumulative long-term effects of development.

In its comments on the NOP, LRWQCB made special note of the adverse impacts of hydromodification, including stream channel instability, degraded water quality, changed recharge processes, degraded aquatic habitat, and potential separation of a stream channel from its floodplain. LRWQCB recommended that the County identify existing sources of hydromodification and develop mitigation measures & guidelines to protect floodplains and channels from encroaching development. This has been included as a recommendation in the summary of mitigating policies and actions.

Permits issued by LRWQCB or by the SWRCB may be required for a wide range of activities associated with General Plan Implementation. Potential permit requirements include:

- Construction of landfills, landfill cells, or changes in waste accepted at currently operating landfills may require a revision to existing Waste Discharge Requirements (WDRs) or new WDRs; no changes may be made to operations at existing landfills until and unless the WDRs are revised (please see EIR §4.13, Public Services and Utilities, for discussion of landfills);
- Land disturbance of more than 1 acre many require a Clean Water Act (CWA) §402(p) stormwater permit, including a National Pollution Discharge Elimination System (NPDES) General Construction Stormwater Permit, Water Quality Order (WQO) 2009-0009-DWQ from the Water Board, or an individual stormwater permit from the Lahontan Water Board;
- Discharge of low threat wastes to surface waters including diverted stream flows, construction and/or dredge spoils, dewatering and well construction and hydrostatic testing discharge may be subject to discharge and monitoring requirements under NPDES General Permit, Limited Threat Discharges to Surface Waters, Board Order R6T-2008-0023;

[30] http://www.waterboards.ca.gov/water_issues/programs/stormwater/industrial.shtml

- Streambed alteration and/or discharge of fill material to a surface water, including water diversions, may require a CWA §401 water quality certification for impacts to waters of the U.S., or dredge and fill WDRs issued by the Water Board.

LRWQCB also notes that some waters of the State are isolated from waters of the US. Determinations of the jurisdictional extent of waters of the U.S. are made by the U.S. Army Corps of Engineers; projects that have potential to impact surface waters require the appropriate jurisdictional delineations; results will indicate whether the impacts are regulated under CWA §401 or through dredge and fill WDRs. Issues associated with jurisdictional delineation and streambed alteration are addressed in EIR §4.5, Biology.

As indicated in the baseline overview, Mono County is a participating agency in the comprehensive Inyo-Mono Integrated Regional Water Management Plan. The coordination of *Draft RTP/General Plan* policies with the IRWMP has been a priority for the County, as strongly recommended by LRWQCB in its comment letter, and Mono County has prepared a detailed summary that shows how IRWMP plan objectives and management strategies are proposed to be incorporated into the County's ongoing planning effort. Table 4.8-7 presents the detailed comparison of IRWMP and County objectives and strategies.

TABLE 4.8-7. Integration of IRWMP Strategies into County General Plan Policies

Inyo-Mono IRWMP Plan Objectives and Management Strategies	Mono County General Plan Policies and Goals
Objective 1: Protect, conserve, optimize & augment water supply while maintaining ecosystem health 1.1. Improve water supply reliability. 1.2. Improve system flexibility and efficiency. 1.3. Support compliance with current and future state and federal water supply standards. 1.4. Address local water supply issues through techniques including, but not limited to: groundwater recharge, conjunctive use of water supplies, water recycling, water conservation, water transfers, precipitation enhancement. 1.5. Optimize existing storage capacity. 1.6. Conserve and adapt water uses to future conditions. 1.7. Capture and manage runoff where feasible. 1.8. Incorporate and implement low-impact development design features, techniques, and practices. 1.9. Promote public education on water supply issues/needs. 1.10. Promote planning efforts to provide emergency drinking water to communities in the event of a disaster. 1.11. Promote water efficiency in fish hatcheries. 1.12. Protect water supplies that support public recreational opportunities.	**Water Resources & Water Quality Goal 1: Ensure the availability of adequate surface and groundwater resources to meet existing and future County domestic, agricultural, recreational and natural resource needs** **Objective A: Develop a comprehensive countywide water resource database** Policy 1: Compile baseline data on the basic components of hydrologic units within the county. *Action 1.1*: Cooperate with relevant agencies and organizations to develop and maintain a comprehensive hydrologic record of local hydrologic units. *Action 1.2*: Study the feasibility of utilizing the existing permitting system for new wells in Mono County as a method to gather information on the depth of the local water table and water use. *Action 1.3:* Work with local water providers, LADWP, Tri-Valley Groundwater Management District and resource agencies to calculate water budgets for each hydrologic unit in the county. *Action 1.4*: Work with local water providers, LADWP, Tri-Valley Groundwater Management District & resource agencies to develop water management plans for hydrologic units in the county.
Objective 2: Protect, restore, enhance water quality 2.1. Support achieving compliance with current and future state and federal water quality standards. 2.2. Improve the quality of urban, agricultural, and wildland runoff and/or mitigate their effects in surface waters and groundwater. 2.3. Support monitoring to better understand major sources of erosion and causes and, where feasible, reduce erosion and sedimentation. 2.4. Protect public health and aquatic ecosystem sustainability.	**Water Resources & Water Quality Goal 1: Ensure the availability of adequate surface and groundwater resources to meet existing and future County domestic, agricultural, recreational and natural resource needs** **Objective B: Identify, secure adequate water for future local domestic needs while maintaining natural resources** Policy 1: Assist and encourage the developed and developing areas of Mono County and local special districts to secure additional water rights within local water basins as necessary for the orderly growth of local communities.

2.5. Match water quality to water use. 2.6. Support appropriate recreational programs that minimize and/or mitigate impacts to water quality.	Policy 2: Encourage the preparation of water management plans by local water providers. *Action 2.1*: Assist special districts in securing available grant monies for water management planning. Policy 3: Encourage the USFS and the BLM to assist local communities in securing the water resources necessary to accommodate community demands, particularly those demands that directly and indirectly result from increased activities on adjacent federal lands. *Action 3.1*: Review and comment on development proposals on federal lands and require full environmental review on out-of-drainage transfers. Policy 4: Encourage the consolidation of small water providers to increase operational and service efficiency. *Action 4.1:* Where feasible require new developments to be served by existing water providers in lieu of new service entities. Policy 5: Future development projects shall avoid potential significant impacts to local surface & groundwater resources or mitigate impacts to a level of non-significance, unless a statement of overriding considerations is made through CEQA. *Action 5.1:* Future development projects with the potential to significantly impact surface or groundwater resources shall assess any potential impacts prior to project approval… Policy 6: Limit development to a level that can be reasonably supported by available local water resources. *Action 6.1:* Require development projects to obtain "will serve" letters from applicable service agencies. *Action 6.2:* For areas not served by an existing water system, require future development projects to demonstrate, prior to permit issuance, that sufficient water exists to serve both domestic and fire flow needs of the development and that use of that water will not deplete or degrade water supplies in the area, or adversely impact natural resources. *Action 6.3*: Deny development projects that have not demonstrated the availability or entitlement to a supply of water adequate to meet the needs of the proposed project.
Objective 3: Provide stewardship of water dependent natural resources 3.1. Protect, restore, and enhance natural processes, habitats, and threatened and endangered species. 3.2. Protect, enhance, and restore ecosystems. 3.3. Support science-based projects to protect, improve, assess, and/or restore the region's ecological resources, while providing opportunities for public access, education, and recreation where appropriate. 3.4. Support research and monitoring to better understand the impacts of water-related projects on environmental resources. 3.5. Identify, develop, and enhance efforts to control invasive species	**Water Resources and Water Quality Goal 1: Ensure the availability of adequate surface and groundwater resources to meet existing and future County domestic, agricultural, recreational and natural resource needs** **Objective C: Promote water conservation programs.** Policy 1: Develop and implement water conservation programs for Mono County government operations. Policy 2: Water-intensive development proposals shall include water conservation measures as a condition of project approval. Policy 3: Work with local water providers to implement water conservation programs in local communities. Policy 4: Encourage effective water conservation programs for communities outside Mono County that benefit from water resources originating in the county, including recycled water projects where feasible. Policy 5: Support efforts by parties in the Mono Lake litigation to secure monies made available by AB 444 to provide replacement water supplies for LA and permanently protect Mono Lake.

Objective 4: Maintain and enhance water, wastewater, emergency response and power generation infrastructure and reliability 4.1. Promote rehabilitation and replacement of aging water and wastewater delivery and treatment facilities in rural communities, including tribal lands. 4.2. Ensure adequate water for fire protection and emergency response. 4.3. Promote and improve energy efficiency of water systems and uses. 4.4. Support water use efficiency in power generation. 4.5. Provide for development and improvement of emergency response plans.	**Objective D: Protect the Public Trust values of the water resources of Mono County.** Policy 1: Encourage & support agencies responsible for reviewing water rights applications to consider the effects of existing/ proposed water diversions on interests protected by the Public Trust. *Action 1.1*: If necessary, file formal protests with the SWRCB when the County determines that granting a water rights application would be harmful to Public Trust values. *Action 1.2:* Require water projects that may impact Public Trust values to avoid or mitigate those potential adverse impacts. Policy 2: Oppose any legislative or regulatory efforts to undermine or weaken protection afforded to county water resources by the Public Trust.
Objective 5: Address climate variability and reduce greenhouse gas emissions 5.1. Increase understanding of GHG emissions resulting from water operations and management. 5.2. Increase understanding of impacts of climate change on water supplies and water quality. 5.3. Manage and modify water systems to respond to increasing climate variability. 5.4. Support efforts to research and implement alternative energy projects and diversify energy sources to move and treat water within the region. 5.5. Support efforts to reduce greenhouse gas emissions in the region. 5.6. Support assessment and mitigation of water-related impacts of renewable and non-renewable energy projects. 5.7. Promote public education about impacts of climate change, particularly as it relates to water resource management in the region.	**Objective E: Protect local water users & biological resources from the adverse effects of out-of-basin water transfers.** Policy 1: Regulate out-of-basin water transfers from private lands in the unincorporated area of the county, in accordance with the following actions. *Action 1.1*: Where not preempted by state law, require a water transfer permit from the Mono County Planning Commission for out-of-basin water transfers. *Action 1.2*: Applications for permits for out-of-basin water transfers shall be submitted to the county Planning Division and shall include the following information: (a) point of extraction; (b) amount of extraction; (c) nature and location of conveyance facilities. Applications for water transfer permits shall include a processing fee, together with applicable environmental fees. *Action 1.3*: Applications for groundwater export projects shall obtain a Groundwater Transfer permit, which requires the assessment of the potential impacts of the project prior to project approval in accordance with CEQA…. Policy 2: Implement Groundwater Transfer Ordinance; consider other local mechanisms to regulate groundwater exports. *Action 2.1*: Initiate the process, via state legislation, to establish additional local Groundwater Management Districts (GWMDs) or to expand the existing GWMD to regulate out-of-basin groundwater transfers in appropriate areas of the county. Policy 3: Oppose federal & state legislation and regulations that provide preferential status to out-of-county water appropriators or allow for increased water diversions from Mono Co.
Objective 6: Promote participation of small and disadvantaged communities, including tribes, in IRWM process to identify and work towards meeting their needs 6.1. Engage regional communities and tribes in collaborative water and natural resource management related efforts. 6.2. Provide assistance for tribal and DAC consultation, collaboration, and access to funding for development, implementation, monitoring, and long-term maintenance of water resource management projects.	**Objective F: Promote the restoration and maintenance of Mono Lake, tributary streams, and downstream areas of the aqueduct system in Mono County, including Grant Lake, Upper Owens River, Crowley Lake, and Owens River Gorge.** Policy 1: Work with the appropriate agencies to develop and implement a comprehensive water management plan for Mono Basin and downstream areas, including assurances that Mono Lake and the local aqueduct system are managed in a manner that protects the ecological and fisheries values of the Mono Basin and downstream areas of the aqueduct system. *Action 1.1:* Support SWRCB Decision 1631 requiring minimum flows to raise Mono Lake level over 6,391' above mean sea level by 2014.

6.3. Promote public education and training programs in disadvantaged communities and tribal areas about water resource protection, pollution prevention, conservation, water quality, watershed health, and climate change. 6.4. Promote social resilience in disadvantaged communities and tribes to more effectively respond to social, economic or environmental disturbances impacting water-related resources.	*Action 1.2:* Support management of the aqueduct system that avoids drastic fluctuations in stream flows. *Action 1.3:* Ensure that any comprehensive water management plan developed as per Policy 1, above, is consistent with the USFS's existing Comprehensive Management Plan for the Mono Basin National Forest Scenic Area. *Action 1.4*: Manage Crowley Reservoir to protect the fishery and recreational opportunities at the reservoir. *Action 1.5*: Manage Upper Owens River to protect fishery quality.
Objective 7: Promote sustainable stormwater and floodplain management to enhance flood protection 7.1 Characterize current stormwater and flood management situations and challenges. 7.2 Promote region-wide integrated stormwater and flood management planning. 7.3 Improve existing stormwater and flood management infrastructure and operational techniques/strategies. 7.4 Promote projects and practices to protect infrastructure and property from flood damage. 7.5 Integrate ecosystem enhancement, drainage control, and natural recharge into construction projects. 7.6 Develop and implement public education, outreach, advocacy on stormwater and flood management matters	**Objective G: Reestablish streams impacted by diversions in the Mono Basin and Long Valley hydrologic units with flows adequate to support fish populations, riparian habitat, and associated recreational and scenic values.** Policy 1: Support efforts to establish minimum flows in all streams impacted by water diversions. In establishing minimum stream flows, allow for appropriate flushing flows as needed. *Action 1.1:* Review technical documents prepared for Mono Basin, Upper Owens, and Crowley Lake areas in order to provide input to the LADWP's water management plan on an annual basis. Policy 2: Provide land use controls that facilitate the restoration of impacted stream channels and adjacent areas.
Objective 8: Promote sound groundwater monitoring, management and mitigation in cooperation with all affected parties. 8.1 Support and implement state-mandated groundwater and surface water monitoring requirements, and other groundwater monitoring efforts. 8.2 Promote efforts to monitor, manage, and mitigate effects of groundwater-dependent projects. 8.3 Develop and support projects that mitigate for the effects of groundwater extraction. 8.4 Protect and improve the quality and quantity of stored groundwater supplies and recharge areas. 8.5 Promote conjunctive use projects. 8.6 Identify existing gaps in groundwater and surface water quantity data and undertake appropriate assessments/ characterization studies. 8.7 Collect data and monitor groundwater and surface water supply variability. 8.8 Promote efforts to manage/design groundwater projects so that future impacts requiring mitigation are avoided.	**Water Resources and Water Quality Goal 2: Protect the quality of surface and groundwater resources to meet existing and future domestic, agricultural, recreational, and natural resource needs in Mono County.** **Objective A: Preserve, maintain, and enhance surface and groundwater resources to protect Mono Co. water quality and water dependent resources from adverse effects of development or degradation water dependent resources**. Policy 1: Future development projects shall avoid potential significant impacts to water quality in Mono Co., or mitigate impacts to a level of non-significance unless a statement of overriding considerations is made through the EIR process. *Action 1.1*: Future development projects with potential to impact water quality significantly shall assess potential impact(s) prior to project approval… In areas determined by County to be of special significance, such an analysis and associated mitigations may be required even if the proposed project conforms to water quality standards established by the LRWQCB for the project area…. Policy 4: Establish buffer zones where recharge occurs, including adjacent to surface waters and riparian areas. *Action 4.1*: Amend the General Plan to specify uses and setback requirements from recharge, riparian, and wetland areas. Continue to enforce setback requirements from surface waters. *Action 4.2*: Establish policies for management of county wetlands. *Action 4.3*: Develop Special Area Management Plans in cooperation with the U.S. Army Corps of Engineers for the Bridgeport Valley and Long Valley, as well as other wetland regions of the county. Policy 5: Control the release of storm water so that runoff from sites in recharge zones does not increase in volume or leave the site more rapidly than it would under natural conditions.

	Action 5.1: Update Grading Ordinance to specify that developers may be required to provide hydrologic studies assessing pre- and post-development runoff. Policy 6: Drill holes, such as those that are used for mining, geothermal development & water development, shall be abandoned & plugged in conformity to state requirements for the protection of groundwater resources and public health and safety.

The IRWMP policies listed above will substantially reduce the potential for future violations of water quality standards, and the Mono County *RTP/General Plan* update includes many additional policies and actions that, when implemented, will reduce potential for water pollution, and protect and enhance natural storm drainage and water quality features, as outlined in the section below. Several of the policies were developed in response to comments received from LRWQCB as well as recommendations contained in watershed management plans prepared by Inyo-Mono Integrated Regional Water Management Program. LRWQCB encouraged the county to (1) incorporate elements of the IRWMP that promote watershed management, avoid and minimize the effects of hydromodification, and encourage recycling and reuse (see Table 4.8-7, and Alternative 4 in EIR §6.3.2), (2) establish and incorporate specific LID implementation strategies (please see *Conservation and Open Space Element* policy 4.A.8.e, which states: "*Subject to the availability of County resources, provide education and advice on LID measures that could be incorporated into project designs"*), and encourage recycling and reuse into the 2015 *General Plan Update*. In response,

The policies and actions noted above and provided in Table 4.8-10 (at this end of this EIR section) will substantially reduce the potential for violation of water quality standards, as will the enforcement of federal and state regulations for the protection of water quality and beneficial uses. However, the level of growth allowed in the *Draft RTP/General Plan Update* would have significant potential to further degrade Mono County water bodies that are already impaired, and to contribute to impairment of other water bodies that are not currently included in list of Category 5 impaired waters. And although serious penalties are available as disincentives for noncompliance, neither the state nor the federal agencies has sufficient resources at hand to reliably and consistently enforce requirements of the Clean Water Act. Thus the policies and actions outlined below will reduce potential impacts, but the ***potential for significant adverse impacts will remain***. The reader is referred to §4.5 (Geology, Soils and Minerals), Impact 4.5-2 for discussion of potential impacts and mitigating measures and policies pertaining to erosion.

RTP/GENERAL PLAN POLICIES AND ACTIONS THAT MITIGATE POTENTIAL FOR WATER QUALTY VIOLATIONS

Please refer to Table 4.8-10 in Appendix D

IMPACT 4.8(b): Would the project jeopardize compliance with wastewater treatment requirements of the Lahontan Regional Water Quality Control Board, or require or result in the construction of new wastewater treatment facilities or expansion of existing facilities?

POTENTIALLY SIGNIFICANT ADVERSE IMPACT. As noted in the baseline overview, 5 Mono County communities are served by formal community sewer systems including Bridgeport (served by Bridgeport PUD), Lee Vining (Lee Vining PUD), June Lake (June Lake PUD), and Crowley (the Hilton Creek CSD); the Town of Mammoth Lakes is fully sewered and also has access to recycled water provided by Mammoth Community Water District. Development elsewhere in the County uses private or community septic systems. Community sewer systems are generally adequate to meet future service demands. In areas not served by sewer systems, development may be limited by requirements pertaining to septic disposal. The Lahontan Regional Water Quality Control Board's water quality regulations have set a maximum of two dwelling units per acre in areas which have community water systems but which require individual septic systems. As a result, the minimum lot size in such situations is slightly over 20,000 square feet. The minimum lot size when both

individual septic and water systems are required is 40,000 square feet. In some areas in the County where individual lots are 7,500 square feet, these requirements essentially make it necessary to have more than one lot to build a house.

The Lahontan Regional Water Quality Control Board (LRWQCB) has indicated that water quality problems in the Lahontan Region (discussed more fully in EIR §4.8, Hydrology) are largely due to nonpoint sources including (among others) individual wastewater disposal systems. Poorly designed and poorly constructed systems will not function properly, and can result in the pollution of ground- and/or surface waters. Accordingly, LRWQCB has established stringent prohibitions to govern the discharge of wastes, including a regionwide prohibition against (a) the discharge of waste which causes violation of any narrative water quality objective (including the Nondegradation Objective), (b) the discharge of waste which causes violation of any numeric water quality objective, and (c) the discharge of waste that would further degrade an existing violation of a numeric or narrative water quality objective. The *Basin Plan* also contains area-specific prohibitions, grouped by watersheds. Area-specific prohibitions in Mono County are listed in Table 4.8-8, and can be viewed online (see *Basin Plan* Figures 4.1-11 (page 4.1-23) through 4.1-19 (page 4.1-30)) at http://www.waterboards.ca.gov/lahontan/water_issues/programs/basin_plan/docs/ch4_implementplans.pdf.

TABLE 4.8-8. Area-Specific Discharge Prohibitions in Mono County

The discharge of waste to surface water, including sewage or sewage effluent, is prohibited in the following locations: (a) Mill Creek and Lee Vining Creek watersheds (b) Rush Creek watershed above the outlet from Grant Lake (c) The Owens River and its tributaries upstream of Crowley Lake above elevation 7,200 feet (d) The Owens River and its tributaries downstream of Crowley Lake above elevation 5,000 feet An exemption to this prohibition may be granted whenever the Regional Board finds (based on geologic and hydrologic evidence presented by the proposed discharger) that the discharge of waste to surface waters will not, individually or collectively, directly or indirectly, adversely affect water quality or beneficial uses.
The discharge of waste from existing leaching or percolation systems is prohibited in the following areas: (a) Rush Creek watershed above the outlet of Grant Lake (b) Mammoth Creek watershed above elevation 7,650', including the drainage area of Mammoth Lakes community. An exemption to this prohibition may be granted whenever the Regional Board's Executive Officer finds (based on geologic and hydrologic evidence presented by the proposed discharger) that the continued operation of septic tanks, cesspools, or other means of waste disposal in a specific area will not, individually or collectively, directly or indirectly, adversely affect water quality or beneficial uses, and that the sewering of such area would have a damaging effect upon the environment.
The discharge of waste from new leaching and percolation systems is prohibited in the following areas (For this prohibition, new systems are any installed after May 15, 1975): (a) Rush Creek watershed above the outlet from Grant Lake (b) Mammoth Creek watershed upstream of the confluence of Sherwin and Mammoth Creeks (d) Mammoth Creek watershed, including the drainage area of the community of Mammoth Lakes, and the Sherwin Creek watershed upstream of the confluence of Sherwin and Mammoth Creeks An exemption to this prohibition may be granted whenever the Regional Board's Executive Officer finds (based on geologic and hydrologic evidence presented by the proposed discharger) that leaching system disposal will not, directly or indirectly, individually or collectively, result in a pollution or nuisance, or other adverse effects to water quality or beneficial uses.
The discharge of waste within the following described area from new or existing leaching or percolation systems is prohibited (For this prohibition, new systems are any installed after May 15, 1975): The area commonly known as the Hilton Creek/Crowley Lake communities included within the W/2, SW/4, Section 25, E/2, SE/4 and the SW/4, SE/4 and the S/2, SW/4 of Section 26, N/2, NE/4, NE/4, Section 34, N/2, NW/4 and the N/2, SE/4, NW/4 and the W/2, NE/4, Section 35, T4S, R29E, MDB&M. An exemption to the prohibition against discharge of waste from new septic/leaching systems may be granted by the Regional Board's Executive Officer after presentation by the proposed discharger of geologic and hydrologic evidence and an acceptable engineering design which sufficiently demonstrate that the use of the proposed leaching system will not, of itself or in conjunction with the use of other systems in the area, result in a pollution or nuisance, or other adverse effects to water quality or beneficial uses. An exemption to the prohibition against discharge of waste from existing septic/leaching systems may be granted by the Regional Board's Executive Officer after presentation by the discharger of geologic and hydrologic evidence that the continued use of an existing leaching disposal system will not, individually or collectively, result in a pollution or nuisance, or other adverse effects to water quality or beneficial uses.

As discussed in EIR §4.8 (impact 4.8-2), several areas of Mono County are currently water limited and other areas are likely to encounter water supply limitations in future years. A number of Mono County waters are shown on the 303(d) list of impaired water bodies (including Bodie Creek, Bridgeport Lake and Reservoir, Crowley Lake, Easter Walker River below Bridgeport Reservoir, Hilton Creek, portions of Mammoth Creek, Rock Creek and Swauger Creek). And quite a few Mono County community areas rely on groundwater supplies for which safe yield is unknown, and other communities rely on groundwater that does not meet drinking water standards and must be blended or treated, often at significant cost, to become potable. The areas of greatest concern would include the East and West Walker River Basins, the June Lake Area of the Mono Basin, the Upper Owens River Basin (Long Valley) and the Tri-Valley area. All of these areas are subject to waste system prohibitions as outlined in Table 4.13-6, and all are shown in the existing and proposed *General Plan Land Use Element* for substantial development (relative to baseline conditions). Yet only two of these areas (June Lake and Crowley) are currently served by a formal community sewer system. The remaining areas rely on septic discharges.

The considerations above indicate that both the existing *Land Use Element* and the proposed *RTP/General Plan Update* have potential to jeopardize compliance with wastewater treatment requirements of the LRWQCB, and both also have potential to require construction of new wastewater treatment facilities or expansion of existing facilities. Impacts are thus considered to be ***potentially significant and adverse***. As outlined in *Basin Plan Appendix C*, LRWQCB has developed detailed criteria for septic tank disposal systems; the criteria can be accessed at: *http://www.waterboards.ca.gov/lahontan/water_issues/programs/basin_plan/docs/app_c.pdf*.

RTP/GENERAL PLAN POLICIES & ACTIONS, AND SUPPLEMENTAL MITIGATION, TO MINIMIZE PROBLEMS OF WASTE DISCHARGES AND TREATMENT

Please refer to Table 4.8-10 in the Appendix

SUPPLEMENTAL WASTE DISCHARGE MITIGATION RECOMMENDATIONS:

1. It is recommended that the County formalize policies consistent with LRWQCB recommendations for controlling the problems associated with septic systems including (a) reevaluate and update the adequacy of existing local regulations for installation and maintenance of septic systems, including applicable criteria from *Basin Plan Appendix C*; (b) continue to limit the use of septic systems on small-lot, higher density developments; (c) encourage alternative waste treatment systems; and (d) encourage and support funding for wastewater treatment plants in outlying areas where water quality problems and/or population density require wastewater collection and treatment.

IMPACT 4.8(c): Would sufficient water supplies be available to sustainably serve the project from existing entitlements, facilities and resources, including groundwater and surface water resources?

POTENTIALLY SIGNIFICANT ADVERSE IMPACTS. MEA Chapter XIII (Hydrology, the source for much of the discussion in this section) notes that the County has conducted numerous watershed assessments in recent years that have contributed to the body of existing data, although the studies do not cover the county in its entirety and gaps remain. Groundwater conditions in Mono County are discussed below, based on the available data.

West Walker River Basin. Individual wells provide residential water throughout the Antelope Valley. Agricultural lands in California and in Nevada are irrigated with water that is diverted from the West Walker River, and flows are also diverted from Slinkard, Lost Cannon, Deep and Molybdenite creeks and the Little Walker River for agricultural use. There is a considerable amount of private undeveloped land upstream of Antelope Valley along the Walker River Canyon, in the Sonora Junction area, and upward toward Burcham Flat and Fales Hot Springs. Although these areas are (and would remain) subject to large minimum parcel sizes, the county has determined that water resources could be impacted if these areas are eventually developed to maximum allowed densities.

Local planning policies for the Antelope Valley are aimed at preserving agriculture over residential development. However, the Valley anticipates increasing development pressures. The County estimates that existing water supplies in this area would be adequate to serve future growth consistent with the proposed *RTP/General Plan Update*. However, the LAFCO MSR identifies lack of long-term reliable water supply as a direct impact on the ability of AVFPD to provide fire suppression service, and concludes that the FPD's capacity to serve new development will be contingent on the development of a long-term dedicated water supply.[31] Since surface waters of the Walker River are already over-allocated, prospects for future agricultural development using surface water are limited to what could be achieved through increased irrigation efficiency, which may be considerable given the MEA observation that existing irrigation systems are based on relatively inefficient flood irrigation.[32] Additional groundwater pumping would also support some agriculture development, but the safe yields of would-be agriculture wells is not known. (The reader is also referred to discussion in §7 of the potential cumulative effects of a proposed Water Transfer Project that would restore to Nevada some portion of the West Walker River flows that were diverted to Mono County).

East Walker River Basin. The MEA indicates that East Walker River is the lesser of the Walker watersheds in water yield, but larger in size with a drainage area of 523 square miles; Mono County comprise 137,000 AFY of the watershed. The East Walker River begins in the Bridgeport Valley, where major tributaries Green Creek and Virginia Creek converge. Other major tributaries originate in the Hoover Wilderness and form the Upper Twin Lake and Lower Twin Lake before flowing into the Bridgeport Reservoir and joining the East Walker. The Reservoir impounds 5 miles of the East Walker River and has a storage capacity of 42,500 AF; it is used primarily to store irrigation water.

A water budget estimates total inflow of 136,900 AF into the Bridgeport Valley, where 36,400 AF is lost to evaporation, infiltration and consumptive use; the net export from Bridgeport Reservoir is estimated at 100,500 AF. Waters of the East Walker are utilized high up in the watershed. At Virginia Lakes (10,000 ft), a small community water system draws water for domestic use, and a seasonal lodging establishment also uses water for commercial purposes. The largest campground in Mono County is at Upper Twin Lakes, where water is drawn to serve the occupants of over 400 campsites. Between the two lakes is the Twin Lake Estates subdivision, which draws water to serve over 200 residences. Before reaching the reservoir, diversions of the East Walker and its tributaries irrigate 20,300 acres of pasture in the Bridgeport Valley. As with the West Walker River, a portion of the East Walker River (which ultimately flows to Walker Lake in Nevada) has been diverted for use in Mono County, and the reader is referred to §7 for discussion of the potential cumulative effects of the proposed Water Transfer Project.

There is one seasonal out-of-basin water transfer that exports six cubic feet per second (cfs) of water from Virginia Creek for irrigation at the Conway Ranch in Mono Basin. Municipal users of water in the East Walker River drainage are supplied primarily by groundwater. The Bridgeport PUD supplies water from its 3 wells to Bridgeport for domestic uses; other residents in the drainage use private wells and surface springs.

Much of the private land outside the Bridgeport Valley has been developed, but the MEA notes that many parcels remain where large developments could in the future be proposed. As with the West Walker Basin, development of these properties could have a significant impact on the available water resources. Much of the agricultural land in the Bridgeport Valley is under conservation agreements that were put in place to preserve scenic and agricultural values. However, there still remain hundreds of parcels that could theoretically be developed. Water demands from these future uses would potentially be served by the Bridgeport PUD; however, such service may require some expansion and renovation of PUD facilities and the district has no long-term plans to identify future capital facilities requirements or associated costs. In the absence of district service, private wells would be relied on to meet domestic needs.

The MEA concluded that agricultural expansion is unlikely in this area since a majority of the pasture land in Bridgeport is already in use and these activities are expected to continue as long as existing water rights remain in place. As noted

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[31] LAFCO, *SOI and Municipal Services Review for Antelope Valley Fire Protection District*, February 2009, accessed online at http://www.monocounty.ca.gov/sites/default/files/fileattachments/local_agency_formation_commission_lafco/page/1058/antelopevalleyfireprotectiondistrict_02.2009.pdf

[32] The Sierra Conservancy notes in its Report on Agricultural Lands and Ranches that Lassen and Mono Counties had the highest irrigated water use of the counties fully within the Conservancy Region (Kenny, Barber, Hutson, Linsey, Lovelace, & Maupin, 2009).

in the baseline discussion, the Walker River Basin is subject to an MOU between Mono County and NFWF that sets the groundwork for eventual transfer (through sale or lease) of water supplies from the Mono County portion of the Walker River Basin into Nevada for the restoration and maintenance of Walker Lake. The Mono County RCD conducted a preliminary analysis of potential impacts associated with this project and concluded that the transfer could reduce recharge of the deep groundwater aquifer, reduce overall water availability for future growth, contribute to a conversation of farmland to nonagricultural use, lower the water levels in the Twin Lakes Reservoirs and instream flows in Robinson Creek, among other potential effects. The Walker River Transfer project is not part of the current RTP/General Plan update, and potential impacts will be the subject of later CEQA review. However, the program if implemented can be anticipated to exert potentially significant additional pressures on the availability of surface and groundwater resources in the Walker River Basin.

The Mono Basin. Mono Basin is a terminal basin located between the Walker and Owens basins. With a total drainage area of 810 sq. mi., it is the smallest basin in the county; most of the Basin's land, and all of its significant water resources, are in Mono County. Total average inflow to Mono Lake from all sources is 230,000 AF, with annual runoff estimated at around 150,000 AF. The streams feeding Mono Lake pick up salts and minerals as they flow from their headwaters into the lake. Since the lake has no outlet, these substances become concentrated creating the highly saline and alkaline characteristics of Mono Lake. Due to the long history of use by LADWP, this basin is well studied, as described in the Baseline Conditions. DWP diversions continue to this day, subject to conditions for the restoration target levels for Mono Lake. In broad terms, however, when the lake level is above 6,391 ft. elevation, all stream flows in excess of 89,000 acre-feet can be diverted by LADWP. The major residential areas in the Mono Basin are June Lake, Lee Vining, and Mono City, along the north shore of Mono Lake. All three areas are served by public water systems – June Lake PUD, Lee Vining PUD, and Lundy Mutual Water Company.

June Lake PUD's (JLPUD) water supply is surface water from Snow, Yost and Fern creeks, as well as June Lake itself. The water is available through various diversion rights allotted to the JLPUD and the Inyo National Forest. JLPUD has rights to 1 million gallons per day (mgpd), with an additional 116,057 gpd on "loan" from the USFS. The IRWMP indicates that water needs of the permanent population (about 700 residents) constitute a relatively small portion of the total water demand. The visitor population can exceed 3,000 persons on weekends and holidays. Depending on whether and how the Rodeo Grounds development proceeds, water demands could be substantially higher. Previous estimates (linked to earlier proposals that did not proceed) have anticipated that annual water demand could increase by 33 million gallons per year (about 102 AFY). The *Mono Basin Watershed Management Plan* indicates that water supply for future growth in the June Lake area is uncertain, as also reflected in the JLPUD *Master Water Plan*.[33] The District's 2007 *Master Plan* shows that diversion rights may not be adequate to meet maximum month average day demand at build-out in both the Village System (with a potential shortfall of 9,800 gpd) and the Down Canyon System (with a potential shortfall of 59,000 gpd).

Lee Vining Public Utility District holds water rights to two springs in Lee Vining Canyon, from which water is gravity fed to tanks with 180,000-gallon storage capacity. The district uses approximately 220,000 gpd (Mono LAFCO 2009).

Lundy Mutual Water Company draws water from supply wells near Mono City, using about 160 afy. The *Mono Basin Watershed Management Plan* indicates that current water supplies for Mono City and Lee Vining appear to be adequate to meet all anticipated demands.

Mono County owns a water right on Wilson Creek, which flows through Conway Ranch in the northern section of the basin. The County has entered into an MOU with an aquiculture business to operate a fish-rearing facility at Conway Ranch, where the County also leases land for the grazing of sheep. The combined uses are relatively insignificant within the watershed context.

In whole, the future water balance of Mono Basin is uncertain. Water distribution has been subject to legal battles and court decisions that could change. Additionally, there have been proposals for additional hydroelectric generation in

[33] JLPUD, *Master Water Plan,* May 2007: http://inyo-monowater.org/wp-content/uploads/2011/09/JLPUD Master-Water-Plan-Final-2007.pdf.

the watershed that may become more feasible with State efforts to bolster renewable energy development. The Mono Basin also has significant potential for residential and commercial growth, including future use of the Rodeo Grounds area in June Lake (not a part of the current EIR, but discussed in EIR §7, Cumulative Effects) and other pending and approved projects. The outcome of these water demand and water supply variables will determine the extent to which future demands can be sustainably served in the Mono Basin.

The Upper Owens River Basin lies immediately south of the Mono Basin. It has a drainage area of roughly 425 sq. mi. including all land that contributes water to Crowley Lake (as well as the lake's outflow through the Owens River Gorge) and Rock Creek, arbitrarily ending at the Inyo County line. Total yield of this watershed is estimated to be about 200,000 AFY. Crowley Lake is a key water storage facility for LADWP and a valuable recreational resource. Waters of the Upper Owens River have the highest consumptive use in Mono County and serve most of the county's population, lands owned by LADWP and intensive recreation.

The Town of Mammoth Lakes, the county's largest and only incorporated community (comprising about 58% of total county population), is located along Mammoth Creek in the Mammoth Lakes Basin. The primary consumptive use of water in the town is domestic. These needs are served by MCWD, which derives its water supplies both from surface-water and groundwater sources. In its 2010 Urban Water Management Plan, MCWD concludes that "*water supply reliability … [is adequate] to meet community needs under the full range of water year types… primarily due to the availability of local groundwater resources, which provide 40% of supply under average conditions, nearly 90% of the supply in a severe one year drought, and 60% of the supply over a three year sustained drought [and] through 2030 (Town build-out), the combined use of Mammoth Creek surface water, local groundwater, and recycled water results in a supply mix that can reliably meet the community needs under the full range of water year types.*" The District notes, however, that this projection could be significantly impacted by future changes to both demands (largely associated with Town land use policies and development approvals) and supplies (including future demand peaks, climate change and drought, and future use of recycled water supplies in lieu of freshwater). Below Mammoth Lakes, the Casa Diablo geothermal power plant uses water for power generation; concerns have been raised that the plant may be impacting the temperature of municipal supplies and downstream supplies delivered to the Hot Creek Hatchery.

In the mid-1970s, septic systems served the entire community of ***Hilton Creek/Crowley Lake***, and roughly two-thirds of the residences and some commercial establishments obtained their domestic water supplies from the direct diversion of surface waters of Hilton Creek. Due to adverse soil and groundwater conditions, the individual septic systems had high failure rates for many years, and elevated coliform concentrations in the surface streams and private water supply systems were attributed to the septic disposal systems. In 1976, Mono County and LRWQCB adopted restrictions and prohibitions on the installation of new septic tank / leach field disposal systems in the Hilton Creek service area. In 1985 LRWQCB prohibited use of existing disposal methods, and recommended construction of a community sewerage system. Hilton Creek CSD now operates a permitted sewer collection and treatment system for all commercial and residential properties in its boundaries. The communities of southern and eastern Mono County continue to rely on septic tanks and leach fields for sewage disposal.

As a whole, the residential areas of Long Valley have experienced substantial residential growth over the last two decades. Demands on water supplies in this area have increased significantly, and it has been estimated that future residential growth according to existing and proposed *RTP/General Plan* designations could increase demand on groundwater supplies by more than 1,800 AFY. Estimates of water availability have varied from as low as 25 AFY to as high as 407 AFY. Groundwater recharge has been estimated at 12,400 AFY but no safe yield has been established. The MEA identifies a critical need for project-specific studies that include drawdown analysis and consideration of cumulative impacts with each new project. Without these studies, the reliability of water supplies to meet planned growth cannot be verified.

Below Crowley Lake, the community of Sunny Slopes is served by the ***Birchim CSD***, with 80 hookups using roughly 400 AFY. To restore domestic service capability and meet fire flow demands, Birchim has within the past decade constructed a new water supply well at depths well below the previous supply well.

Farther down-gradient is Swall Meadows, which is served by a mix of small private water systems and individual wells. At the bottom of the Sherwin Grade is the community of Paradise, served by the Lower Rock Creek Mutual Water Company, with 110 hookups averaging 350 acre-feet/year. The Rock Creek Ranch Specific Plan area will, at build-out, add another 70 residences, with its own small water company and onsite wells. No water supply constraints have been identified in these communities.

The MEA anticipates that growth demands in this Basin will continue, and forecasts that water supply will eventually become a limiting factor for growth in Mammoth Lakes, placing added pressure on the nearby communities of Crowley, Sunny Slopes, Swall Meadows and Paradise. These additional demands will inevitably be served by groundwater supplies, but resource allocation will be complicated by the number of small service districts in the area and the lack of a comprehensive plan. The MEA forecasts that required water supply assessments may eventually demonstrate that the supplies in this Basin are fully allocated.

The Tri-Valley area of the Owens Valley. The Benton, Hammil and Chalfant valleys form a single watershed that is tributary to the Owens River; approximately 540 sq. mi. are within Mono County. This is the driest of the major watersheds in Mono County, collecting roughly 35,000 AFY. Streams draining slopes on the western side of this watershed are generally ephemeral and do not contribute much water to the area. Most of the runoff in this basin is captured as surface water, or drains into the valley's deep alluvium and is captured as groundwater. The principal uses of water in the Tri-Valley are agricultural and residential. Groundwater provides for all domestic needs, as well as the majority of water for agriculture. Surface diversions supplement groundwater for irrigation, and provide head pressure for some minor hydroelectric generators. There is one authorized out-of-basin transfer for 300 AFY of potable water. Historically this water has been trucked to bottling facilities outside Mono County; the level of use has varied over time in response to transportation costs. Residential development has put additional pressure on groundwater availability in the Tri-Valley, where lower building costs have spurred residential development and increased the demand on groundwater supplies. Aside from private wells serving residential needs, the Tri-Valley has one active public water system, the White Mountain Mutual Water Company in Chalfant with aout 50 connections. A second system has been proposed to serve the adjacent White Mountain Estates subdivision (also with about 50 connections).

Concern over possible exportation of groundwater from the area led to the formation of the Tri-Valley Groundwater Management District in 1990. The district has been active since that time and implements an area-wide well-monitoring program. The District is identified as the presumptive Groundwater Management Agency for the Tri-Valley area in the County's plans for implementation of the Sustainable Groundwater Management Act of 2014. The MEA concludes that future water demands in this area will be shaped by patterns of growth and agriculture practices. Conversion of agriculture lands to residential use would decrease demands on surface water but increase use of groundwater; conversion to less-water-intensive crops could decrease surface water use. Unlike other watersheds in the county, the Tri-Valley has a documented case of groundwater decline, particularly in the Hammil Valley and possibly in Chalfant as well. Continued draw-down of the groundwater table would place added demands on surface water supplies. For these reasons, the MEA concludes that future projects in the Tri Valley area will face increased difficulty demonstrating that demands will not significantly impact the watershed, possibly to the extent of rendering many projects infeasible.

The ***Adobe Valley*** is a terminal basin, roughly 265 sq. mi. of which is located in Mono County. Most of the water in Adobe Valley comes from the Glass Mountains, and the primary water use is for irrigation of pasture, with very limited residential and recreational uses. Adobe Valley is among the most remote valleys in Mono County, with only seasonal access and limited development pressures. Water availability will be a key factor for project proposals, since supplies must be adequate to meet fire suppression requirements (no fire services are available) as well as domestic demand.

The ***Fish Lake Valley*** is primarily a Nevada watershed, but a small part (roughly 60 sq. mi.) lies inside Mono County, mostly on the east slope of the White Mountains, with a sliver in the community of Oasis. Streams from the east slope of the White Mountains are the principal water source, and flows drain into Inyo County and Nevada shortly after reaching the valley floor. The primary use of water in the region is agriculture, with nominal residential use. Water supply demands in this area will likely be shaped in large part by land use decisions in Nevada, particularly in Western Nevada which has grown substantially in recent years but faces significant water supply issues. The MEA anticipates that wells

drilled in Mono County may be used to serve development in Nevada; however, groundwater transfers out of state are subject to interstate regulation.

Groundwater Quality. MEA Chapter XIII (Hydrology) notes that the groundwater quality of Mono County is considered good to excellent overall. The only groundwater considered "marginal to poor" is in the Mono Basin, but even there the wells serving domestic uses often provide excellent quality water. This discrepancy is likely due to deeper waters of the Mono Groundwater Basin being affected by the brackish waters of Mono Lake, while shallower wells draw from more recent and higher-quality, water inflow.

Other areas in the county have generally good-quality groundwater, although wells in some communities have naturally occurring trace amounts of arsenic, boron, fluoride, and uranium that pose a risk to public health. Water purveyors have in some areas been required to drill new wells in search of cleaner water (for blending or as alternate sources), and some homeowners have been required to install filtration systems to increase the quality of their water. Recent changes in the allowable standards for certain elements have created significant problems for water purveyors who now find their water out of compliance with federal safe drinking water regulations. Near thermal wells and springs, water quality generally has higher trace amounts, in some cases rising to the point where it is not suitable for domestic use and irrigation (CDWR Bulletin 118 2004).

Fire-Related Considerations. In its review of system indicators for assessing the health of agricultural lands and ranches,[34] the SNC references a CalFire study that analyzed the impact of severe wildfires on watershed function. CalFire concluded high severity fire can significantly impact watershed function, primarily through the increased volume and frequency of sediment delivery and deposition. Fires expose soils to erosive precipitation, and destroy plants whose roots give the soil strength. The CalFire study assessed the SNC region as a whole; the Eastern Subregion (which includes Mono County) was ranked to have the lowest threat, with just 7% of watershed area at high risk, and fully 77% of water shed areas with low or no risk. Although the Eastern Subregion fared well relative to the Sierra Nevada as a whole, the study highlights the importance of fire management as a key area for the County as it develops strategies to support implementation of the Sustainable Groundwater Management Act of 2014.

Summary. Because surface water rights are fully allocated, future development in Mono County will depend on groundwater, the use of which has gone unregulated until the Sustainable Groundwater Management Act of 2014. Mono County has a Groundwater Transfer Ordinance in place that requires a proponent of any out-of-basin water transfer to obtain a permit and perform environmental work to assure the practice will not alter the existing water balance. The ordinance regulates out-of-basin transfers, but does not address transfers across county or state lines (other regulations do apply to transfers across state lines).

As indicated in the foregoing discussion, several areas of Mono County are currently water limited and other areas are likely to encounter water supply limitations in future years. Quite a few Mono County community areas rely on groundwater supplies for which safe yield is unknown, and other communities rely on groundwater that does not meet drinking water standards and must be blended or treated, often at significant cost, to become potable. The possibility of water transfers from the Walker River Basin into Nevada also has potential to impact future ground and surface water supplies (see §7, cumulative impact discussion). These constraints indicate that there may not be sufficient water supplies available from existing entitlements, facilities and resources to serve *RTP/General Plan* growth in some parts of the County. The areas of greatest concern would include:

- The West Walker River Basin, including lands in and upstream of Antelope Valley along the West Walker River, in the Sonora Junction area, and upward toward Burcham Flat and Fales Hot Springs
- The East Walker River Basin, including private lands outside of the Bridgeport Valley
- The June Lake Area of the Mono Basin, where the future water balance is considered to be uncertain
- Upper Owens River Basin, particularly in Long Valley where safe yield is unknown (despite significant growth)
- The Tri-Valley area, where significant groundwater declines have already occurred.

[34] Sierra Conservancy, *System Indicators, Agricultural Lands and Ranches*, Final Report, December 2013.

Despite the potential limitations on water supply, there are no water reclamation activities in any county locations outside of the Town of Mammoth Lakes; only MCWD engages in recycling at the present time. As noted in the NOP comment letter received from LRWQCB, the State Board adopted a Recycled Water Policy in 2009. The Policy is specifically intended to increase use of municipal recycled water, and thereby sustain and augment local water supplies, in a manner consistent with state and federal water quality laws; incentives are now in place to encourage recycling. LRWQCB notes that eligible parties may use recycled water for irrigation of a variety of public-use lands (not generally including residential landscaping), and encourages Mono County to consider use of recycled water as a General Plan implementation strategy.

The watershed assessments prepared by Mono County (see discussion in §4.8.3.2) contained a series of recommendations for protecting and enhancing the function of each studied watershed. Recommendations are briefly listed below along with information about how each is addressed in the *Draft 2015 General Plan Update*:

- Recommendation: Incorporate policies to protect the ecological values of streams and riparian areas & wetlands
  - How addressed: Such policies and actions are included in the *Open Space and Conservation Element*, as summarized in Table 4.8-10; in particular, please see Policy 4,A,7 and Action 4.A.7.a, as well as the Proactive Policy Alternative 3 discussed in EIR §6.4.2.
- Recommendation: Consider an ordinance on requiring new development to replace any existing water supplies damaged during construction
  - How addressed: Such policies and actions are included in the *Open Space and Conservation Element*, as summarized in Table 4.8-10; please see Action 3.B.6.A, in particular).
- Recommendation: consider an ordinance on riparian protection.
  - How addressed: Such policies and actions are included in the *Open Space and Conservation Element*, as summarized in Table 4.8-10. Policies and actions of special note include Policy 4.A.5, 4.A.6, and 4.A.7 (including supporting actions).
- Recommendation: Use a tracking system for privately-owned wetlands that are subject to development.
  - How addressed: Such policies and actions are included in the *Open Space and Conservation Element*, as summarized in Table 4.8-10. Please note Policy 4.A.7, Action 4.A.7.a and, in particular, 4.A.7.b.
- Recommendation: Create a county position for an LID specialist to provide design assistance to applicants seeking a grading or building permit.
  - How addressed: The underlying goal of LID education is addressed in the *Open Space and Conservation Element,* Action 4.A.8.e.
- Recommendation: Incorporate policies to address areas where groundwater quality does not comply with safe drinking water standards.

  How addressed: Such policies and actions are included in the *Open Space and Conservation Element*, as summarized in Table 4.8-10. Please see Policy 3.4.3 and Action 3.B.4.a, which provide for assisting small water districts to comply with regulations and seek funding for improvements as needed.
- Recommendation: Consider fire management issues as a key element of watershed function.

  How addressed: The *Open Space and Conservation Element* contains a new Countywide Issue that recognizes the importance of fire risk and other factors: "*The protection and enhancement of streams, wetlands, and riparian areas is a critical element in preserving and restoring water quality and water supply, and addressing ecological functions such as erosion, sedimentation, fire risk, and wildlife habitat. Increased development, recreation, and water development and/or extraction has the potential to impact the long term health of these ecological communities.*"

In addition, MEA Chapter XIII (Hydrology) notes that although the Crowley area has a high occurrence of wetlands, springs and phreatophytic vegetation, no safe yield of groundwater has been established. The MEA cites a critical need for project-specific studies that include drawdown analysis and consideration of cumulative impacts with each new project. In response, the county has added new policies and actions to the *Conservation and Open Space Element* including Policy 23.A.2 (and Action 23.A.2.a and 23.A.2.b) and, most notably Water Resources Policy 3.B.6, Action 3.B.6.a(f) which requires projects with potential to impact ground and/or surface water supplies to undertake pump tests which may include a drawdown analysis.

In specific consideration of the programs, policies and actions identified above and listed in Table 4.8-10, it is concluded that approval and implementation of the *draft RTP/General Plan* would have a *less than significant impact* on the availability of groundwater supplies, facilities and resources, and surface water supplies in most areas of Mono County, but would have a ***potentially significant adverse environmental effect*** **on groundwater and surface water supplies** in the areas noted in this section.

RTP/GENERAL PLAN RECOMMENDATIONS, POLICIES AND ACTIONS THAT MITIGATE POTENTIAL IMPACTS ON GROUNDWATER AND SURFACE WATER SUPPLIES

Please refer to Table 4.8-10 in Appendix D

IMPACT 4.8(d): Would implementation of the RTP/General Plan Update alter existing drainage patterns in a manner that would result in substantial erosion, siltation, flooding or polluted runoff?

POTENTIALLY SIGNIFICANT ADVERSE IMPACTS. Sediment is identified by EPA as the most common pollutant in rivers, streams, lakes and reservoirs, and attributes fully 70% of total sediment to human activities and uses of land (natural erosion accounts for the remaining 30%). In urban settings, the most concentrated sediment releases occur during construction activities -- including relatively minor construction projects (such as room additions).[35] Grazing, and vegetation loss due to wildfire are also cited as major contributing sources. Through its grading ordinance, the County actively mitigates the impacts of construction activities as they relate to sedimentation and other effects. The County also has a *Best Management Practices Manual* for erosion control and sedimentation that is intended to supplement requirements in the County's Erosion and Sediment Control Ordinance. [36] The purpose of this manual is to help implement requirements in the County's Erosion and Sediment Control Ordinance, Chapter 13.08 of the Land Development Code. The intent of the ordinance is to implement erosion and sediment control standards to minimize disturbance to natural drainages, prevent erosion, and to mitigate the impacts to water and air quality that result from development construction and maintenance activities. The manual presents BMPs that have been found effective at mitigating potentially adverse effects to water and air quality.

Livestock grazing contributes significantly to degradation of water quality, and causes damage to the fragile soils found in riparian areas. LRWQCB and BLM, among other agencies, have cited over-grazing as a significant pollution problem, particularly in terms of sediment loading to water courses and the destruction of meadows, and other documents have identified grazing as a threat to habitat management plans.[37] During moderate-to-high-intensity storm events, sediment loading from damaged areas adjacent to stream channels is very high. The diversion of water for stock use reduces stream flows and causes livestock to concentrate at watering locations, thus further aggravating the problems. In the Lahontan Region, 13 of the 43 water body segments listed as impaired (30% of the Region's listed waters) are for violations of pathogen water quality objectives; many of these violations are associated with livestock grazing, and many of these water bodies are located in Bridgeport Valley.

In collaboration with U.C. Davis the Sierra Business Council, the LRWCB has recently initiated incentives for ranchers to modify grazing activities in an effort to protect and improve water quality. The incentives focus on grant funding support for ranchers to install and monitor the efficacy of grazing management practices. LRWQCB is also considering potential changes in *Basin Plan* water quality objectives (particularly for pathogens) to account for grazing activities. Initial LRWQCB actions are expected to address impairments in the Bridgeport watershed, and LRWQCB anticipates that

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[35] EPA, *Sediment Pollution,* EPA website: http://cfpub.epa.gov/npstbx/files/ksmo_sediment.pdf
[36] Mono County, *Best Management Practices Manual for Erosion Control and Sedimentation,* 1996.
[37] MCWD, *Final EIR for the Reclaimed Water Project*, 1988.

future regulatory actions will consider grazing activities in other watersheds with impaired water bodies.[38] LRWQCB has also implemented grazing management measures[39] to protect sensitive areas in range, pasture, and other grazing lands. The measures are based on USDA Natural Resources Conservation Service (NRCS) standards including erosion control, adequate pasture stand density, and rangeland condition, to be applied to the entire grazing areas affected. The county has incorporated a new Action 5.C.2.i into the *Conservation and Open Space Element* that states: *"Recognize and support the RWQCB, Sierra Business Council and UC Davis incentives for ranchers to install and monitor the efficacy of grazing management practices in an effort to protect and improve water quality."*

The MEA notes that another area of concern is the Crowley Lake watershed, where the USFS has completed an Environmental Assessment for the grazing allotments. Inyo National Forest began examining conditions on the 12 allotments in the Crowley Lake Watershed in 2005. The study identified a need to modify grazing management for improved watershed condition and function. The study dismissed the impact of grazing on nutrient loading, however, concluding that nitrogen inputs from cattle are minor, and phosphorus inputs do not occur.

Other sources of sediment contamination are mining activities, high-intensity recreational area use, and runoff from developed areas, as well as catastrophic events including earthquakes, severe flooding and fire damage to watersheds. In Mono County, a primary negative effect of sedimentation is on fisheries. Aquatic breeding habitat is occasionally heavily impacted by high silt and sediment loads in the water, and sediment also tends to accumulate in lakes and reservoirs; EPA notes that sediment can clog fish gills, reducing disease resistance, lowering growth rates, and affecting fish egg and larvae development. Mono County has on occasion removed reservoir sediments to adjacent areas where the material will not wash back in; however, the material if inadequately stabilized can cause sedimentation downstream.

Impacts to wetlands also have potential to alter drainage patterns, increase sediment loads, and other associated effects. Among their many other benefits, wetlands serve to attenuate peak flood flows, store flood waters, recharge groundwater supplies, and enhance water quality through sediment retention and the uptake of nutrients. While wetlands are present throughout Mono County, the communities of Bridgeport and June Lake have been found in the biological assessment to have a high percentage of plant species that are classified by federal regulators as wetland species. Both of these communities (along with Antelope Valley and the Tri-Valley area) are considered to be high hazard flood zones, indicating that the loss of wetlands would have potential to impact flood risk.

The contamination of surface waters or groundwater by sewage is another major concern that results from human activities. Most of the small communities and rural households in the county use septic systems for sewage treatment. When these systems fail, they can allow wastewater to escape and reach groundwater or flow into adjacent streams, thus presenting health hazards to downstream users. Contamination of surface water with animal wastes from livestock grazing can limit its use as a source of drinking water. Since many of the small communities of Mono County depend partially or completely on local water sources, potential contamination of these waters is a major problem. The potential also exists for agricultural lands to contribute leachate from fertilizers and pesticides to water in areas like Antelope Valley, where groundwater provides some recharge to the water supply of a down-gradient reservoir.

Chemical nutrients that enter reservoirs and impoundments allow for conditions that stimulate algal growth and the creation of algal mats that float on the surface of the lakes. This condition has become a concern in both the Bridgeport Reservoir and Crowley Lake, where continued eutrophication poses a major risk to the aquatic ecosystem.

The Town of Mammoth Lakes is the only area in Mono County with a formal Master Plan of Drainage.[40] The plan notes that there are two watershed basins in the Town: the southern part of the community drains the Lakes Basin to Mammoth Creek, and the northern part drains Mammoth Mountain and lands from Meridian Blvd. northward to Murphy

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[38] RWQCB Meeting of July 11-12, 2012, South Lake Tahoe, *Workshop on Livestock Grazing and Water Quality.* From the LRWQCB website: http://www.waterboards.ca.gov/lahontan/board_info/agenda/2012/jul/brdgprt_grzngwrkshp.pdf.

[39] http://www.waterboards.ca.gov/water_issues/programs/nps/encyclopedia/1e_graz.shtml

[40] Town of Mammoth Lakes, 2005 Storm Drain Master Plan Update, prepared by Boyle Engineering. May 2005. Mammoth Lakes Website: http://www.ci.mammoth-lakes.ca.us/DocumentCenter/Home/View/569.

Gulch. During high runoff periods, Murphy Gulch eventually flows into Mammoth Creek. The Master Plan divides the basins into sub-areas for analysis, 5 in the southern area, and 8 in the northern area. Storm water runoff flow were developed for the 20-year and 100-year flows. Existing facilities within each drainage area were evaluated for flow capacity, street capacity, and existing flooding problems. In areas where there are existing channels, pipes and streets the facilities were reviewed for a 20-year storm. The added capacity of the street was considered for the 100-year storm events. The *Master Plan* recommended that the Town implement high priority improvements (new storm drain pipes and assessment of the condition of corrugated metal drainage pipes) as well as second priority system improvements and general water quality recommendations that included enforcement of BMPs and use of retention and detention basins in construction and for groundwater recharge.

There are few storm drain improvements outside of Mammoth Lakes. June Lake Village has a limited storm drain system (catch basins, grates and culverts) that was constructed by Caltrans,[41] and the Lee Vining and Bryant Field Airport facilities both have improvements to divert flows off the runways. Storm runoff in other areas of the County either percolates into the ground or flows into nearby streams.

As noted in the baseline overview, Mono County completed a *Capital Facilities Plan* in 2005 that included a Storm Drainage Master Plan for the June Lake and Hilton Creek areas. The report anticipated that peak flow rates in both drainages would remain generally unchanged through buildout. Recommendations were provided for improving facilities including (for both watersheds) minor improvements to existing drainage inlets, increased capacity for several small culverts, and substantially increased capacity and possible relocation of identified large culverts preceded by detailed hydrologic studies to refine peak flow rates and other base assumptions used in the model. The report also recommended further study of the Down Canyon and Reversed Creek areas of June Lake in order to better characterize the existing drainage improvements. Funding mechanisms for these improvements were established but subsequently rescinded due to low development activity and poor economic conditions. To address these issues, the county has added a new Action 13.D.2.j to the *Conservation and Open Space Element* that states: *"Reconsider development impact fees and other funding to improve drainage systems in communities, and consider a requirement for development to fully mitigate drainage impacts."*

The wide ranging programs, policies and actions contained in the *draft RTP/General Plan Update,* in combination with existing and evolving standards and regulations of other agencies, will contribution to a substantial reduction in erosion potential and improved drainage patterns throughout the county, as will the reduction in overall levels of development that would be allowed under the proposed *RTP/General Plan* relative to the existing *General Plan.* However, in consideration of the scope and breadth of erosion and sedimentation sources and the extent of future development that would be allowed relative to existing development, and recognizing that many of the contributing factors are not readily amenable to regulation, it is concluded that approval and implementation of the *draft RTP/General Plan* would have a ***potentially significant adverse environmental effect*** on drainage patterns and associated potential for erosion, sedimentation, flooding and polluted runoff.

RTP/GENERAL PLAN POLICIES AND ACTIONS THAT MITIGATE POTENTIAL IMPACTS ON DRAINAGE

Please refer to Table 4.8-10 in Appendix D

[41] Mono County, June Lake MEA, 2002; obtained at Mono County website: http://www.monocounty.ca.gov/sites/default/files/fileattachments/planning_division/page/1745/june_lake_master_environmental_assessment_2002.pdf

IMPACT 4.8(e): Would implementation of the proposed RTP/General Plan Update place housing in a mapped 100-year flood hazard area or place structures in the 100-year flood zone that would impede or redirect flows?

LESS THAN SIGNIFICANT IMPACT. As noted in the baseline overview, flooding is a frequent natural hazard impacting Mono County including flash floods, river floods (and potential flooding from dam failure). FEMA has prepared Flood Insurance Rate Maps showing 100-year flood hazard areas (i.e., areas in which floods have a 1% probability of occurring in any given year). The community areas most likely to be impacted by a 100-year flood include properties along the East and West Walker Rivers, Reversed Creek, and Spring Canyon Creek. Areas in these high hazard zones include Antelope Valley, Bridgeport Valley, the June Lake Loop, and the Tri-Valley area. The areas of special flood hazard were identified by FEMA in a 2012 report entitled "*Flood Insurance Study for the County of Mono*." The report included a Digital Flood Insurance Rate Map; however, because the report did not provide thorough information regarding base flood elevations, alluvial fans and mudflow hazards, the *Safety Element* concluded that it was of limited use for local development review and planning purposes. The County has identified a significant need to update the flood hazard maps of community areas where these deficiencies exist and where development pressures are greatest (including the Antelope Valley, June Lake, and Tri-Valley areas, as well as Crowley Lake). Additionally, many of the critical facilities that may be needed to respond to flood events are located in flood hazard zones (Walker Senior Center, California Highway Patrol in Bridgeport, June Lake Fire Department, June Lake Community Center, and the Sheriff's Substation south of Mammoth). In response to these concerns, the *Draft Conservation and Open Space Element* contains a new Action 2.A.1.j: *"Seek priority funding from FEMA and SWRCB to update the flood hazard maps of community areas where needed, including providing information regarding base-flood elevations, alluvial fans and mudflow hazards."* The Element also includes a number of new stormwater management policies and actions that will contribute to reduced flood hazards (see Actions 4.A.8.a through 4.A.8.e).

Because of the long history of flooding events, flood hazard mitigation is a well-established process in Mono County with a wide variety of local, state and federal participants. Key measures contained in the existing flood hazard mitigation program are listed in Table 4.8-9.

TABLE 4.8-9. OVERVIEW OF EXISTING FLOOD HAZARD MITIGATION IN MONO COUNTY

The County participates in the National Flood Insurance Program (NFIP) through its Floodplain Regulations. The regulations limit development in the floodplain, establish a floodplain administrator, and identify requirements for future development within or adjacent to a floodplain, including raising structures above the base flood elevation.
The County implements its Land Clearing, Earthwork and Drainage Facilities ordinance to avoid or minimize erosion and siltation impacts from development that could lead to increased flooding hazards.
After the January 2001 Walker River flood, the County identified repetitive loss properties along Walker River and acquired 11 parcels in Walker, 4 in Mountain Gate, and 1 in Topaz to comply with the Stafford Act §404 acquisition program. The parcels are restricted to uses compatible with open space, recreational, or wetlands management; no new structures or improvements are allowed except a public facility open on all sides and related to allowable uses. All structures must be flood-proofed or elevated to the Base Flood Elevation plus one foot of freeboard.
In accordance with stream setback requirements in the Land Development Regulations, the County requires new development to set back adequately from surface waters for flood protection. Deviations from setback requirements in the 100-year floodplain must be reviewed by the County Floodplain Administrator prior to permit issuance.
Future development projects with the potential to cause substantial flooding or siltation are required to provide an analysis of the potential impacts prior to project approval. The analysis is required to include project alternatives or mitigation measures to avoid or mitigate potential impacts to downstream resources.
The County's GIS system includes the FIRM maps and the DWR Awareness Floodplain Maps that are currently available for the county.
To reduce risks associated with natural hazards, Safety Element policies require the county to inform affected persons of potential seismic, geologic, volcanic, fire, flood, avalanche and other natural hazards in the area during the permit process. In compliance with state law, property sellers must notify buyers of potential hazards affecting the subject property.

In summary, flooding is a significant safety hazard in Mono County, and homes and structures continue to exist in areas that are at risk of flooding. The regulations outlined above, in combination with the proposed RTP/General Plan policies and actions below, will reduce risks for future development and redevelopment of existing uses to less than significant levels. Risks will be reduced (but will continue to be significant and unavoidable) for land uses located in flood zones that have 'grandfathered' rights to remain in place; these ongoing risks predate and are neither caused by nor worsened by the proposed *RTP/General Plan Update.* Over the life of the *2015 RTP/General Plan Update*, the number of properties with grandfathered rights will diminish as new entitlements are sought and the properties become subject to current flood zone protections and standards. In consideration of the factors presented in this section, it is concluded that impacts will be ***less than significant.***

RTP/GENERAL PLAN POLICIES AND ACTIONS THAT MITIGATE POTENTIAL FLOOD-RELATED IMPACTS

Please refer to Table 4.8-10 in Appendix D

IMPACT 4.8(f): Would project implementation expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?

LESS THAN SIGNIFICANT IMPACT WITH MITIGATING POLICIES AND ACTIONS. As noted, twenty-one dams are located in Mono County, plus one additional dam (Rock Creek Lake dam, which is located in Inyo County) that is upstream of Mono County properties (see Table 4.8-5). The potential causes of dam failure are varied and can include flooding, earthquakes, blockages, landslides, lack of maintenance, improper operation, poor construction, vandalism, and terrorism. The Mono County EOP notes that failure of any of the dams located in the county could cause flooding. None of the dams is considered large enough to be considered a 'major dam,' and most are located in remote areas with limited downstream development. However, 6 dams have been identified as posing some threat to downstream properties, recreationists and campers in the event of dam failure: the Lower and Upper Twin Lakes, Lundy Lake, Long Valley/Crowley Lake, Rush Creek Meadows, and Saddlebag dams. GIS data indicates that 62 developed parcels in Mono County are currently located within a dam inundation hazard area, of which roughly 80% are residential with flood damage potential estimated at $9.7 million; the other 20% are owned by LADWP with an estimated loss potential of $40 million. No critical facilities are located within dam inundations zones in Mono County.

The greatest threat for dam failure occurs in late spring when Eastern Sierra reservoirs are typically full. The County EOP notes that failure of 9 of the reservoirs in the county would present specific flooding threats as described below:

- **Crowley Lake:** Failure of Long Valley Dam would scour the downstream Owens River Gorge; this gorge is deep with no development except small-scale LADWP power plants and limited recreational use. Depending on the volume of water, the community of Bishop (12 miles downstream) could also be flooded.
- **Waugh, Gem, and Agnew Lakes:** These reservoirs and dams are located on Rush Creek above the June Lake Loop. Failure of the Rush Creek Meadows Dam at Waugh Lake could affect Gem Lake and Agnew Lake downstream. The failure of Gem Lake Dam could similarly affect Agnew Lake downstream. Rush Creek empties into Silver Lake along the June Lake Loop; development within the path of its floodwaters includes single-family residential development, a resort complex, and campgrounds.
- **Grant Lake:** Grant Lake is located on north end of the June Lake loop. Failure of this dam could cut off US 395, affecting the County's main transportation route and jeopardizing the safety of residents and visitors.
- **Saddlebag Lake:** Saddlebag Lake is located towards the top of Lee Vining Canyon, along the Tioga Pass Road. Lee Vining Canyon is an extremely deep canyon with a limited number of developed uses (seasonal campgrounds, a USFS Ranger Station, and limited seasonal recreational use) that are located near the mouth of the canyon. The community of Lee Vining is located at the mouth of Lee Vining Canyon, on a ledge above the creek bed.

- **Lundy Lake:** Lundy Lake is located in Lundy Canyon. A small subdivision is located directly downstream of the dam. Many of those homes are second homes, used only seasonally.
- **Upper and Lower Twin Lakes (Bridgeport):** Failure of either these dams could flood downstream areas adjacent to Robinson Creek, including campgrounds, resorts, and the Rancheria subdivision. Depending on the severity of the flooding, Bridgeport could also be affected.
- **Bridgeport Reservoir:** The failure of Bridgeport Reservoir would inundate the East Walker River downstream, perhaps well into Nevada, affecting recreational users of the river, as well as downstream ranches.
- **Rock Creek Dam:** The failure of Rock Creek Dam, which is located in Inyo County, would affect downstream areas located in Mono County, including campgrounds and resorts, some of which are used only seasonally.
- **Lake Mamie, Lake Mary, and Twin Lakes (Mammoth Lakes):** The Town of Mammoth Lakes Emergency Operations Plan (EOP) notes that there are three dams above the Town—those at Lake Mamie, Lake Mary, and Twin Lakes. Lake Mamie and Lake Mary drain into Twin Lakes. Twin Lakes impounds about 150 AF of water and breach of its dam could send a 3' high wall of water downstream. Areas along Mammoth Creek could experience considerable and rapid flooding, particularly in Old Mammoth.

Based on GIS data, 62 developed parcels in Mono County are currently located within a dam inundation hazard area, roughly 80% of which are residential. The remaining 20% of parcels are owned by LADWP. Critical facilities located within dam inundation zones include power plant facilities in the following locations:

> **Critical Facilities in Dam Inundations Zones:** Southern California Edison facilities located below Lundy Lake, below Tioga Lake, and above June Lake (2 facilities), June Lake PUD facilities located below Grant Lake; and Los Angeles Department of Water and Power Hydroelectric Generating Stations in the Owens Gorge (2 facilities).

The EOP indicates that dam failure hazards are not considered likely. This conclusion is based on the small size of the dams, the fact that there has never been a dam failure in the County, and the fact that dam regulation is a well-established and ongoing process through the state's Dam Safety Program. The State of California regulates non-federal dams in California and the federal government regulates federal dams to ensure safe operation. Mono County regulates development in floodplain areas where dam inundation is also likely to occur.

Mono County is a participant in the National Flood Insurance Program (NFIP) which enables property owners to purchase insurance protection against losses from flooding. Participation in the NFIP requires Mono County to adopt and enforce a floodplain management ordinance to reduce flood risks to new construction in Special Flood Hazard Areas (SFHA). Provisions of the county's ordinance are encoded in *Land Use Element Chapter 21, Floodplain Regulations.* In 2012, the County issued Development Standards Flood Plain Regulations[42] that specify, for all special flood hazard areas, the allowed methods and materials for anchoring, construction practices, elevations and floodproofing, and standards for utilities. The Mono County Director of Public Works acts as the Floodplain Administrator, and the Building Official maintains the Federal Insurance Rate Maps for potential flood areas.

The proposed RTP/General Plan update does not incorporate any land use plans, policies or objectives that would expose additional people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam. The recommended objectives, policies and actions will reduce the exposure of new developments to risk of damage from dam failure and, as noted above, none of the Mono County dams is considered to pose a major threat to public safety. For these reasons, the overall exposure to significant risk from dam failure is considered to be less than significant. Measures contained in the proposed *Safety Element* update policies to safeguard residents from dam flooding hazards are outlined below. These policies are reinforced by emergency response capability outlined in the 2012 Emergency Operations Plan as well as the 2006 Multi-Hazards Plan.

[42] Mono County Department of Public Works, *Development in Mono County within a FEMA Floodplain,* 2012.

RTP/GENERAL PLAN POLICIES AND ACTIONS THAT MITIGATE POTENTIAL DAM FAILURE IMPACTS

Please refer to Table 4.8-10 at the end of this EIR Section.

IMPACT 4.8(g): Would implementation of the proposed RTP/General Plan Update expose people or structures to inundation by seiche, tsunami, or mudflow?

LESS THAN SIGNIFICANT IMPACT WITH MITIGATING POLICIES AND ACTIONS. Seiches are earthquake-generated waves that occur in enclosed or restricted bodies of water such as lakes and reservoirs. Similar to the sloshing of water in a bowl or a bucket when it is shaken or jarred, seiches can overtop dams and pose a hazard to people and property within their reach. The *Mono County Safety Element* states that there is no available evidence that seiches have occurred in Mono County lakes and reservoirs.

Tsunamis are unusually large sea waves that are produced by an undersea earthquake (also known as a 'seaquake') or undersea volcanic eruption. All of Mono County is separated from the Pacific Ocean by several hundred miles and an intervening mountain range (the Sierra Nevada) and not at risk of a tsunami.

Mudflows involve very rapid downslope movement of saturated soil, sub-soil, and weathered bedrock. The 2006 *Multi-Hazard Plan* indicates that potentially hazardous mudflows occur every year in the eastern Sierra County, and can occur in areas with a slope of 15% or more. The 2012 *Mono County Safety Element* references a 2012 FEMA study that examined County areas of special flood hazard. However, the study did not provide thorough information regarding alluvial fans and mudflow hazards, and the County has identified a significant need to update the flood hazard maps to correct these deficiencies. Large mudflows, such as the one that occurred in 1989 in the Tri-Valley area, can be destructive, particularly at the mouths of canyons.

Mudflows can also be triggered by volcanic eruptions which, in Mono County, have ranged from small to cataclysmic. When an eruption does break out, its impact will depend on the location, size, and type of eruption as well as wind direction. An eruption during winter months could melt heavy snow packs, generating mudflows and locally destructive flooding. Volcanic hazards are not considered to be one of the most prevalent natural hazards in Mono County due to the uncertainty of such an event and ongoing monitoring. The US Geological Survey (USGS) operates the Long Valley Observatory to monitor the Long Valley Caldera through; to mitigate impacts, the observatory provides a warning system.

The proposed RTP/General Plan update does not incorporate any land use plans, policies or objectives that would expose people or structures to an increased risk of loss, injury or death from inundation by seiche, tsunami or mudflow. Seiche and tsunami events do not occur in Mono County, and the proposed *Safety Element* update includes policies to reduce the threat to public safety posed by hazards associated with mudflows. These policies are reinforced by emergency response capability outlined in the 2012 Emergency Operations Plan as well as the 2006 Multi-Hazards Plan.

RTP/GENERAL PLAN POLICIES AND ACTIONS THAT MITIGATE POTENTIAL IMPACTS ASSOCIATED WITH SEICHE, TSUNAMI AND MUDFLOW

Please refer to Table 4.8-10 in Appendix D
